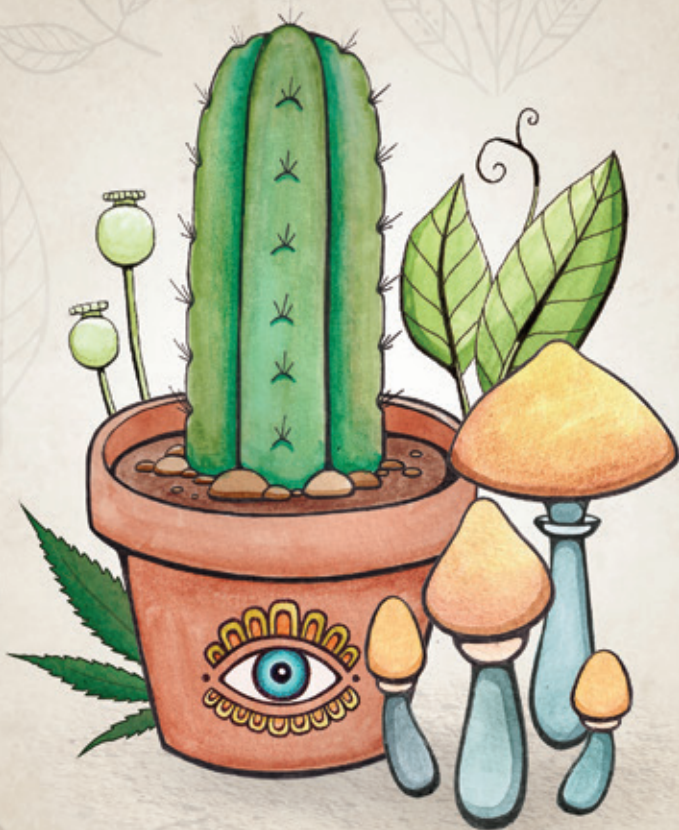


Entheogenesis Australis

Journal 5





Entheogenesis Australis

Garden States
Psychedelic Symposium
2022



The Entheogenesis Australis (EGA) Conference Journal was launched in 2009 to showcase the diversity of the Australian ethnobotanical community, from serious scientific findings to playful provocations and inspiring art. This fifth issue of the EGA Conference Journal was prepared as part of the Garden States 2022 Psychedelic Symposium, taking place on the 2nd - 4th of December 2022 at Springvale City Hall, Springvale, Victoria, Australia.

If you would like to contribute to a future issue of the EGA Conference Journal, please email: journal@entheogenesis.org

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Disclaimer

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No claim is made as to the accuracy or authenticity of Conference Journal content, nor do we encourage illegal activities of any type. EGA does not accept any liability to any person for the information contained.

Ethnobotanics have risks and benefits and should always be treated with caution and respect. Some practices and ideas associated with the use of ethnobotanics are embedded in cultural and religious traditions.

Research, due diligence, and caution are essential. Ensure to understand local laws, traditions, and sustainability before working with any ethnobotanics.

Entheogenesis Australis Garden States Psychedelic Symposium 2022 Credits & Thanks

Resounding thanks to all who dedicated their time, energy and resources into creating this amazing gathering! And thanks to the special community who journeyed to share this space.

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Furthermore, much gratitude to the dedicated volunteers, crew, along with the 50+ programming contributors whose hard work kept the EGA engine purring over the weekend.

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Front Cover art by IzWoz

Plants cards by IzWoz

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'O'oliuqi'
Rivea corymbosa
(LSA)



Gold caps - *Cuber*
Psilocybe cubensis
(Psilocybin)



'Blue meanies'
Panazolus sp.
e.g. *Psilocybe*
botryotricha
(Psilocybin)

About EGA

Entheogenesis Australis (EGA) has grown organically over the years, starting out as a small Victorian based ethnobotany interest group called Mini Ethnobotanica Victoria. EGA is now one of the longest running ethnobotanical conferences in Australia and, to our knowledge, the world.

Inspired by the 2001 Ethnobotanica conference at Wandjina Gardens in northern New South Wales and the growing interest in ethnobotany in Australia, a small Victorian network developed, led by Tim Payne and Carl Turney. This group held ethnobotany meetings in Ringwood library, east of Melbourne, and plant swap meet ups and social gatherings in the Royal Botanic Gardens Victoria that occasionally still happen today. The meetings and community grew across Australia, linked by a couple of very active online forums - most notably, the world's longest running ethnobotanical forum, The Corroboree. In 2003, Carl sought support from others in the community to assist running the 2004 symposium in his absence. Jonathan Carmichael, Adrian Glaister and Martin Williams joined the team and with that shift in 2004, Mini Ethnobotanica Victoria formally became Entheogenesis Australis, as the group aimed to expand the focus and scope of the conference.

The first official EGA conference was held in Belgrave, Victoria on Sunday the 6th of June 2004, running over a single day and having two streams. It was advertised and very well attended, introducing a much wider audience to the study of ethnobotanical plants.

In 2004-2005, the core group at the time started to chart a more conscious and intentional direction. Art, music and wellbeing programming were added to EGA events to complement the lectures and workshops.

After a series of successful conferences, Entheogenesis Australis was incorporated as a not-for-profit association in 2008.

EGA conferences alternated between outdoor and indoor environments, including events at academic venues in the Melbourne metropolitan area, and large-scale open-air events in rural Victoria. By 2009, a dedicated group of around 20 part-time volunteers were working on the conference, and in the same year, EGA introduced a journal publication to supplement the conference presentations.

In 2010, Rick Doblin (MAPS) attended the EGA Symposium, and discussions following an EGA workshop led to the formation of our sister organisation Psychedelic Research in Science & Medicine (PRISM).

In 2014, EGA celebrated its 10-year anniversary with a successful conference at RMIT.

In 2016, EGA ran a successful community fundraising campaign, 'Support the Conversation Around Psychedelics', to kick start development of the 2017 EGA Symposium in Australia. If you are in a position to consider offering financial support for future events, please see the 'donate' page on the EGA website.

In December 2017, EGA realised its most ambitious project to date – a large scale outdoor conference at 'Holmesglen at Eildon', Victoria, where many leading thinkers and prominent experts in the field from Australia and around the world converged to discuss various aspects of ethnobotany. The conference was attended by 650 people and was a massive success, presenting the latest discoveries, research and developments to a diverse audience.

The 2017 conference was also a significant academic success, setting off a cascade effect in the research field in Australia that had been slowly growing for the previous 15 years. Once again, EGA worked with PRISM and experts who had attended the event to workshop better outcomes for Australia in various areas of psychedelic research. From this point on, there has been a rising tide of interest. Media has started to cover the area in a much more positive light. Within three months of the 2017 conference, the doorway for ethnobotanical and psychedelic research in Australia had finally been opened.

In 2018, EGA officially became a botanical charity and in 2019, a new symposium named 'Garden States – A Forum for Cultivating Ethnobotanical Plants, Knowledge and Community' was held over one day in Melbourne's eastern suburbs.

In 2019, a joint clinical trial between PRISM and St Vincent's Hospital Melbourne was announced to investigate the use of psilocybin as an adjunct to psychotherapy to treat depression and anxiety for terminally ill patients.

The 2020 Garden States symposium was postponed due to the global COVID-19 pandemic and will now take place in the first weekend of December 2022. You can find the latest information and tickets for the upcoming symposium on the EGA website.

In 2022, EGA released a new website, which included the Entheogen Combination Matrix, a harm reduction resource calculating the risk of psychoactive plant combinations. This year, EGA also joined forces with Kahpi – the Ayahuasca hub.

Following Garden States 2022, the next EGA major outdoor symposium is tentatively set for early December 2024.

EGA launched an online drug policy discussion group in 2010. You can express your interest to join the policy discussion group by emailing ega-policy@googlegroups.com

In 2013, EGA launched a YouTube video channel – Entheo TV – enabling the public free access to educational material recorded at EGA conferences. Subscribe to Entheo TV: www.youtube.com/entheotv

EGA uses social media networks to share news, articles, and original educational content, including its public Facebook page: www.facebook.com/EGA.plant.org

EGA has a community discussion group on Facebook that focuses on general awareness of a wide range of relevant issues. Join the Facebook group: www.facebook.com/groups/entheo/

EGA also has a Twitter account that highlights a wide range of perspectives, including botanical research, art, philosophy and policy amongst other things: www.twitter.com/EGAPolicy



Our Purpose

Entheogenesis Australis is a charity using education to help grow the Australian ethnobotanical community and their gardens. Established in 2004, we encourage knowledge-sharing on botanical research, conservation, medicinal plants, fungi, arts, and culture.

Through our conferences and workshops, we aim to celebrate the culture, art, politics and community around medicine plants in the hope to better wellbeing for humankind and the planet.

Entheogenesis Australis would like to celebrate and support diversity within our community. We hope to offer a welcoming and accessible space across our events and conferences, and the community more broadly.

Entheogenesis Australis exists to enhance the Australian natural environment by:

E – Encouraging the propagation, cultivation, conservation, preservation and sharing of plants and fungi of ethnobotanical significance whilst nurturing botanical environments.

G – Growing community and developing connections through conversation, events, media and the creative arts, acting as a multidisciplinary nexus for knowledge sharing within the field of ethnobotany.

A – Advancing botanical discussion through research, critical thinking, education, creativity, innovation, and awareness about plants, fungi and related compounds with potential beneficial applications for humankind and the natural environment.



Entheogenesis Values Statement

We believe access to plants is a fundamental human right for all people; relationships between humans and plants are symbiotic and of the utmost importance to each of us, to humankind, and to life on earth.

We believe all people should have access to plants for ornamental, food production, medicinal or spiritual reasons. Any regulation of plants should provide pathways that allow individual or community access, not just industry.

We do not believe in the criminalisation of any people for individual plant use, and we support decriminalisation for the benefit of all people.

'Indigenous peoples have the right to their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals. Indigenous individuals also have the right to access, without any discrimination, to all social and health services.'

- United Nations Declaration on the Rights of Indigenous Peoples, 2008, Article 24, Section 1



nimbinmardigrass.com
hempembassy.net

Acknowledgment of Country

EGA acknowledges the many Traditional Owners and Sovereign Custodians throughout all nations of Australia and their ongoing care for Country and culture. We honour their ancestors and Elders past and present, and pay respect to all Aboriginal, Torres Strait Islander and First Nations people.

In Australia, we live and work on stolen Country that was never ceded, and settler colonialism continues. This dispossession, from which many in our community benefit, causes ongoing trauma to Indigenous people and communities.

We recognise that we benefit from the knowledge and insights of First Nations people from around the world, including long relationships with the plants we revere, and that this Indigenous Cultural and Intellectual Property has often been obtained disrespectfully.

EGA encourages all in our community to learn to do our work the “right way”, to understand and recognise different cultural protocols, and to show respect.

We enthusiastically support the Uluru Statement, which calls for First Nations' voices in Australian parliament, for treaty, and for truth. We encourage each and all of our community to take up the invitation in the Uluru Statement to work through Australia's unfinished business.

www.ulurustatement.org

Entheogenesis Australis Statement on Black Lives Matter, Racism, and Respecting Traditional Knowledge

Entheogenesis Australis (EGA) stands with the Black Lives Matter movement and all who wish to address the harm of racially motivated discrimination, violence and injustice.

We condemn the persecution, inequality and systemic abuse of human rights that Black, Indigenous and People of Colour (BIPOC) continue to endure in Australia and around the world. These issues are complex, sensitive, long-standing, and deeply entrenched in society.

Our community benefits greatly from sacred and medicinal plants and from Indigenous knowledge on their use and cultural significance. EGA strongly believes that how we receive and share information is a powerful act and requires the utmost care and consideration.

EGA respects the rights of Traditional Owners to choose when and where to share knowledge - botanical or otherwise - outside of their communities. There is a long history of exploitation, misappropriation, and destruction of Indigenous knowledge and culture by colonial powers, from government policies through to corporate and

commercial interests. Healing racism in our community includes understanding and adhering to correct cultural protocols, respecting intellectual property, and proper consultation. This is a learning process, and we are striving to improve in these areas.

The prohibition and criminalisation of certain native plants and their traditional use, as well as other psychoactive substances, disproportionately impacts BIPOC communities across the planet. The failed war on drugs is founded on and inextricably tied to systemic racism, with police forces acting as a tool of dispossession, domination and control through aggressive tactics and racial bias. In Australia, the shameful fact is that First Nations people are incarcerated at a higher rate than any other people in the world, in 2020 making up around 28% of the prison population but only 3.3% of the country's population. Our drug laws serve to continue cycles of disadvantage and trauma within these communities.

In seeking to create a better and fairer world with the help of plants, we must not ignore the very real and important issues of equal access, intersectionality, privilege, complicity, and intergenerational trauma. We acknowledge that action is far more meaningful than words.

EGA is committed to amplifying BIPOC voices through our programming and media content, and to making our community, our events, and our online presence safe, equitable and inclusive spaces for all. We endeavour to listen, support, learn, evolve, and proactively engage in the ongoing conversation to combat racism at all levels of society.

Respectfully,
Entheogenesis Australis

info@entheogenesis.org
www.entheogenesis.org

Friends of EGA

We would like to thank the following organisations for supporting EGA:



Visual art and Earthwear created by two creative creatures doing their best to make Earth like home. Izwoz have been contributing art to EGA projects and events since 2004. Working with ink, paint, watercolour, print and digital media, they are always in the process of creating something new. When not creating art they are likely out on adventure exploring nature or working on other creative or community projects.

www.izwoz.art

“Driven by passion, led by evidence”



Enlighten mental health is focused on delivering high quality mental health services via telehealth across Australia. We also offer educational resources regarding psychedelic harm reduction and integration for mental health professionals and the general public. We are veteran owned and operated and support many veterans through ketamine assisted treatment. We offer general mental health services and focus on providing high quality psychedelic harm reduction and integration services.

www.enlightenmh.org

02 6198 3226 - Australia wide



SpaceBeingz Continuum is a collaborative art and tech project; dissolving the boundaries between creativity, technology and community.

Exploring the mysterious in search of the beautiful weirdness~

We are all SpaceBeingz!

www.spacebeingz.io



Aadii Mesh Foundation is a future focused charity tracking what Terence McKenna called the Archaic Revival, the most significant expansion of human conscious ever known. As we live through the collapse of scientific-industrial society, a new world is emerging based around a new humanity. Research shows Terence was right, it does involve a resurgence of indigenous themes that reconnect us to nature and the frequencies of Mother Earth.

By tracking solar cycles and the transit of our solar system between interstellar clouds, the year 2032 stands out as a major tipping point. Tune-in to our Future Sense podcast to learn how human nature is changing and how the current global chaos will slingshot us into a brighter future.

Founder and futurist Steve McDonald is chairperson and co-founder of Psychedelic Research in Science & Medicine. Learn more at www.aadii.org

AOD Media Watch is a collective of volunteer rogue clinicians, researchers, journalists who want to see better reporting of Alcohol and Other Drug (AOD)-related issues in the media. We aim to support journalists to report on science and evidence rather than on myths, unsupported opinions and moral panic. We seek to foster a spirit of collaboration with the media, to provide constructive feedback, and to be a resource used by journalists.

Find out more via www.aodmediawatch.com.au



MYCOcommunity is a not-for-profit community organisation that aims to increase public awareness about fungi and the vital role they play in the ecosystem, for health and environmental sustainability.

Mycology is one of the fields that is most driven by citizen scientists. Not only do they contribute to taxonomic and ecological research, but they play a vital role in collecting data for conservation of threatened fungi. They also drive many innovations in applied mycology. We want to make scientific skills, training and equipment accessible to citizen mycologists.

We also run Mycelium Lab which is a community laboratory in Victoria. It is focussed on citizen science, sustainability and conservation. We have scientific equipment for a variety of purposes including microbiology, mushroom cultivation, plant tissue culture, microscopy, DNA extraction and amplification and more.

For more info or to get involved visit www.myco.org.au



Psychedelic Research in Science & Medicine (PRISM) is a DGR-1 charity, established in 2011 to initiate, coordinate, and support formal research into the applications of medicinal psychedelics and related technologies. PRISM provides scientific expertise for clinical trial and technology development for medicinal psychedelics and consciousness research. PRISM supports clinical research for the treatment and prevention of conditions for which current therapies provide limited relief.

www.prism.org.au



The Signs of Life
PSYCHOLOGY
Integrating science and the sacred

The Signs of Life (SOL) psychology is an organisation founded by Dr Lani Roy which seeks to support a safe and ethical ecosystem of psychedelic and mental health services.

SOL integrates science and the sacred by working across the ceremonial, recreational and clinical context.

SOL provides ketamine, cannabis and CBD services, and offers clinical services specialising in complex trauma, sexual abuse and spiritual emergence. SOL is passionate about providing student placements, education programs, psychedelic trial consultation, preparation, integration and harm reduction services.

www.thesignsoflife.com.au

The Australian Psychedelic Society is a registered charity which aims to:

Undertake and facilitate positive and constructive collaboration with a range of organisations, both in and outside psychedelic spheres.

Engage with psychedelic and broader communities to facilitate connection, belonging and cohesion.

Educate to reduce harms and stigma, to produce accessible and evidence-based information, and to highlight both contemporary and historical psychedelic culture.

Take a proactive, community-driven approach to achieve legal reform and to empower people to advocate for themselves and their communities.

We hope that in creating and engaging with communities across Australia we can better advocate for decriminalisation and break stigmas associated with psychedelic and entheogen use.

To learn more or contribute to our work, go to: www.psychedelicsociety.org.au



**AUSTRALIAN
PSYCHEDELIC
SOCIETY**



DanceWize (Victoria logo left, NSW logo right) is a program of Harm Reduction Victoria and the NUA (NSW Users and AIDS Association).

Founded in 1995, DanceWize (formerly RaveSafe) is a harm reduction peer education and support outreach program at music events and festivals. Receiving permanent funding in the early 2000's through the Department of Health, DanceWize have delivered information, education, resources and care to thousands of Victorians.



We support self-determination and empowerment and oppose stigma and discrimination.

To apply to be a DanceWize volunteer, visit dancewize.org.au (VIC) or dancewizensw.org.au

Daily Grind

Daily Grind has rolled with Adelaide's skaters since '96 and we continue to be Adelaide's foremost family owned skate and surf shop.

Our commitment to both sports remains unwavering, our shops are staffed by riders, our teams are all locals and our range is packed with collaborations with mates and a couple madmen we can't shake.

We love our Shops and a majority of our customers, they inspire us to keep riding and sharing the feeling that only a rider knows.

Neither skateboarding or surfing has much future in a decimated environment, nothing does, something we're acutely aware of and do our best to refrain from contributing too. We're far from perfect but we're busting our ass to try and get our intentions and abilities closer aligned.

<https://dailygrind.com.au>



Kahpi
The Ayahuasca Hub

Kahpi is a learning hub dedicated to the Amazonian brew, ayahuasca. Our online courses and articles cover everything from the culture to the science of the brew.

<http://www.kahpi.net>



About PRISM

Psychedelic Research in Science & Medicine (PRISM) is a DGR-1 charity, established in 2011 to initiate, coordinate, and support formal research into the applications of medicinal psychedelics and related technologies to enhance wellbeing.

Key Pillars



Scientific Expertise

Here at PRISM we have been dedicated for the last decade to supporting research into the therapeutic potential of psychedelic-assisted therapy. Our team has broad-ranging experience in clinical trial development, science communication, harm reduction and social benefit development.



Clinical Research

PRISM's medical psychedelic research program seeks to develop evidence-based treatments that reduce suffering, enhance our understanding of disease mechanisms, and illuminate the study of consciousness itself.



Knowledge Sharing

PRISM practises with the values of Open Science, transparent and accessible knowledge that is shared and developed through collaborative networks for the world to benefit. Likewise, our educational goal is to enable understanding, enrich experience and participate in the evaluation of knowledge.



Cultivating Connection

PRISM facilitates the translation of expert knowledge through our research network, educational content, and consultation. We seek to enhance wellbeing through scientific research and in the wider community by supporting an ecosystem of contributors, fellow researchers, and clinicians.

Vision

A healthy and connected future that nurtures human wellbeing and ecological awareness. Supported by the careful use of psychedelics.

Values



Evidence-informed

Our approach is iterative and informed by research integrating emerging evidence to maximise benefits and mitigate risks.



Innovation

We are committed to paradigmatic change through the process of evolving knowledge.



Connection

We seek to enhance the wellbeing of the wider community while supporting an ecosystem of contributors, fellow researchers, and clinicians.



Transparency

We value knowledge sharing, education and translation. Our research operates primarily with Open Science principles.



Integrity

We are honest, authentic, and accountable. We apply an ethical and considered approach in the pursuit of excellence.



Inclusivity

We stand for equal rights and access. We are committed to research that benefits those from all socio-economic groups and aim to honour traditional indigenous perspectives.

PRISM's Research

Psilocybin for End-of-Life Anxiety

From January 2018, PRISM has engaged with several stakeholders to initiate Australia's first clinical trial of psilocybin-assisted psychotherapy, for anxiety and depression associated with terminal illness, at St Vincent's Hospital Melbourne (CT-2018-CTN-04702-1). Recruitment for the randomised-controlled trial commenced in earnest in early 2021 and as of December 2022, thirty-four of the planned 40 participants have been treated. The outcomes so far have been extremely promising - a tribute to the skills and commitment of the small palliative care team at St Vincent's that has been conducting the study.

MDMA for Post-Traumatic Stress Disorder (PTSD)

Following two prior attempts by PRISM to conduct a clinical trial of MDMA-assisted psychotherapy in Australia, in 2018 Edith Cowan University provided support for a small feasibility study. As of September 2020, with the assistance of MAPS, PRISM received ethics approval to conduct the research. PRISM was required to purchase a special safe to be allowed to import and store the MDMA. Through our collaboration with Edith Cowan University, Murdoch University and Abbotsford Private Hospital, the first Australian received an MDMA-assisted psychotherapy session this year. A major milestone for Australia. (CT-2020-CTN-02367-1)

Holistic effects of 5-MeO-DMT in healthy participants

This study is to the best of our knowledge a worlds' first clinical study that employs a holistic approach to researching the effects of 5-MeO-DMT administered per intramuscular injection. Previous research has indicated that 5-MeO-DMT has a relatively safe profile of use, but there is still much to learn about the neurological effects, physiological benefits, and the experience on wellbeing. This is an Investigator-Initiated study by a team of researchers at Swinburne University of Technology, Hawthorn. The study is carried out in collaboration with PRISM, as well as Maastricht University, The Centre of Psychedelic Research at Imperial College, and the University of Oslo.

Psilocybin for Depression

PRISM is also engaging with a research team based across several universities in Melbourne to initiate a clinical trial of psilocybin-assisted psychotherapy for Treatment-Resistant Depression (CT-2020-CTN-02260-1). This proof-of-concept study has recruited the first of 15 planned participants, and administered the first dose of 25 mg psilocybin, supported by psychotherapy, in November 2022.



Wood Lover Paralysis

Symon Beck

A useless, garbled sound emerged from my mouth as I tried to wake my friend, asleep less than two meters away, but to no avail. We had found a good haul of fresh, beautiful *Psilocybe subaeruginosa* in an area we hadn't picked before and made a tea with ascorbic acid. We'd both had several cups a couple of hours earlier. The psychoactive effects were moderate in intensity, and all had been going well. My friend had decided to go to bed, and I'd had another cup of the tea.

It was a few hours after we first drank that the weakness started in my mouth. I found I was unable to chew a corn chip more than a couple of times without my jaw and tongue getting too weak to manage. After scraping the half-chewed chips from my mouth and starting to wonder what was going on, my neck stopped supporting my head. My chin would hit my chest, I'd lift my head back up with my hand, and almost immediately, it would fall forward again and limply land on my chest once more. This started to get worrying! Next were my spinal muscles, as I involuntarily slumped forward in my chair and couldn't right myself for some minutes. I would get the strength to straighten myself up, but rapidly I would slump again and be too weak to correct my posture for several minutes.

"Right, this isn't good", I thought. A quick internet search while my hands still worked yielded a hint at what might be happening – 'wood-lovers paralysis', described on the Shroomery forum. "Okay, at least you probably haven't eaten the wrong mushrooms, not that you know a mushroom that would do this anyway!" I wasn't about to present at the local hospital and expect them to have any idea what was going on when I had never heard of this before in medical training or several years of active involvement in the psychedelic mushroom community (this wasn't the safest approach - never hesitate to go for medical help if you're worried for your health). So, I decided that going to bed and hoping to wake up healthy the next day seemed like the best option – the person describing wood-lovers' paralysis on the forums hadn't died, and I hoped I wouldn't either (again, not the safest decision - never hesitate to seek medical assistance).

I got up from my chair and started walking the ten meters to my bed. Halfway there, I fell to my hands and knees, too weak to stand, until my arms gave way moments later. So it was that I came to be flat on the floor of my living room, trying to move my mouth and tongue to make noise to wake my friend right next to me. Alas, to no avail. So, I lay still and tried to focus on my breathing, monitoring it for any signs that the weakness may be impacting my ability to inhale and exhale. I desperately hoped I would continue to be able to breath.

The story above, told to me by my friend Swim, got me interested in the phenomenon of wood-lovers' paralysis. When I first went to research this phenomenon, information was scant. I searched through the *Shroomery* forum and found some personal accounts. The earliest was from 2001 in a post titled "*I cannot fucking walk*" (budshroomey, 2001). There were also theories, mostly related to contamination with some sort of pathogen, with some anecdotal reports claiming that antihistamines could treat the condition. These theories didn't seem very likely to me with my basic understanding of movement from medical studies.

There was mention of mycologist Paul Stamets discussing the phenomenon, with one forum member saying Stamets had suggested that another chemical, perhaps baecocystin, was responsible for wood-lovers' paralysis (notapillow, 2009). Very little was (or is) known about baecocystin (Sherwood, et al. 2020), but the idea that it might be a chemical produced by mushrooms rather than a contaminant seemed more intuitive to me. Otherwise, I thought, why wasn't this sometimes happening with the consumption of other edible species growing in the same habitats as the wood-loving *Psilocybe* species that caused it?

Study commitments ended my quest for an explanation until several years later, when I started moderating for the Facebook group *PMANZ* in 2019. During the first *Psilocybe subaeruginosa* season after I joined the team, I was intrigued to see several reports of this phenomenon. Followed by replies from others saying they had experienced the same thing. It occurred to me that this may not be as uncommon as I had thought. My interest was piqued once again, and it seemed like a pressing safety issue to get some understanding of what was going on and what the risks associated with wood-lovers' paralysis might be.

Scholarly search engines yielded only a few papers mentioning weakness or paralysis associated with psilocybin mushroom consumption. The first paper I read (Allen, et al. 1991) described several cases of brief episodes of weakness and paralysis with the consumption of some species of *Psilocybe* in New Zealand in the 1980s. I found it astonishing that this phenomenon, causing unexplained and unusual symptoms of sometimes dramatic weakness, had been known since at least the 1980s without any further academic investigation into the cause. The paper (Allen, et al. 1991) hypothesized that the reason was likely contamination with agricultural chemicals, but I could not think of such a chemical that would cause such symptoms. Further, Swim was affected by a batch of mushrooms picked in an unmanaged area of forest, far from commercial agriculture.

I also came across two articles published in *Psychedelic Science Review* about hypothesised causes for wood-lovers' paralysis. The earlier of the two (Bauer, 2018) discussed ideas that I had mostly come across on forums. The latter of the two, titled "*Wood Lover Paralysis From Magic Mushrooms: The Aeruginascin Hypothesis*" (2019) hypothesized that aeruginascin or a possible dephosphorylated metabolite of aeruginascin may be the cause of the paralysis. This hypothesis is based on the structural similarity of aeruginascin to bufotenidine. Both are trimethyl ammonium compounds resulting from the N-methylation of the classical psychedelic compounds psilocybin and bufotenin respectively. Bufotenidine has been found to cause a flaccid paralysis in animal and tissue studies conducted several decades ago (Ghsoal, et al. 1969; Bhattacharya & Sanyal, 1972). Bauer (2018) postulated that the structural similarity between aeruginascin and bufotenidine may mean the former has similar 5HT₃ receptor activity as the latter, which they thought may explain the paralysis seen with bufotenidine.

I felt this theory was promising, but for a slightly different reason. The papers exploring bufotenidine's activity suggested to me that it had an anti-nicotinic, neuromuscular junction blocking activity which led to a typical paralysis. This effect is how a number of muscle relaxing agents used during surgery work. It is also similar to the direct effect of antibodies in the autoimmune condition myasthenia gravis, which results in a use dependent weakness of the muscles. I thought anti-nicotinic neuromuscular junction blockade was a very plausible mechanism to explain the symptoms Swim had described.

Among this background research, mycologist Caine Barlow and I designed a survey to collect information about people's experiences with wood-lovers' paralysis. We hoped to define the symptoms and time course of the syndrome and get some basic information about some of the possible individual and environmental factors that we felt may be related to the syndrome, or that we thought needed to be ruled out as factors. The *Australian Psychedelic Society* kindly hosted the survey. Starting in June 2020, we collected over 400 responses, including ~165 individuals who had experienced wood-lovers' paralysis. Over half of these had experienced the phenomenon multiple times (Beck & Barlow, 2021). This was far more than either of us expected, particularly given most respondents were from Australia when most of the online reports were from North America.

Once we had some results coming in, I tried to find some expert help for investigating this phenomenon. I called several university toxicology and pharmacology departments without success. One professor told me casually on the phone that wood-lovers' paralysis cannot exist because the poisons information centre they worked for doesn't get calls about it. A major regional society for relevant professions posted my query to their message board, but the spokesperson told me not to get my hopes up. They said even if someone were interested in exploring the syndrome, the fact that the chemicals involved were Schedule 9 drugs of abuse in Australia meant very few would want to deal with the red tape involved, or the potential professional stigma that may be attached to anything 'drug' related. I never got any responses. This really highlighted to me the burden the current laws around psychoactive substances place on all forms of related research, even where it is only biochemical in nature. So, we turned overseas.

I reached out to Dr. Andrew Chadeayne, CEO of biotech company CAAMTech in North America. I was specifically interested in their work on aeruginascin and its postulated dephosphorylated metabolite 4-hydroxytrimethyltryptamine (N-methylated psilocin). His team had recently published the first data (Chadeayne, et al. 2020) around the synthesis, structure and serotonergic binding affinities of this substance. I wanted to find out whether they had conducted any testing of affinity for muscle type nicotinic cholinergic receptors – the receptors bufotenidine blocks to cause paralysis.

Somewhat to my surprise, given how unsuccessful my attempts to engage other experts had been, Dr. Chadeayne replied. He was interested in wood-lovers' paralysis too. This is how I found out he and Barbara Bauer were responsible for the original "aeruginascin hypothesis" (Bauer, 2019) that had led me to explore the mechanism of bufotenidine's paralysing effect and thus hypothesise that aeruginascin may be causing wood-lovers' paralysis through anti-nicotinic neuromuscular junction blockade. Even better, he had a working group looking into the phenomenon! Experts from a range of fields in biochemistry, with resources and skills that may be able to answer this question! And to top it off myself and Caine Barlow connected with researchers Dr Monica Barratt and Dr Liam Engel and got university ethics approval to write up the results of our survey for academic publication.

That is the path of my citizen science journey with wood-lovers' paralysis. It has shown me that so much remains unknown. It has demonstrated that if you come across an exciting unknown that interests you, you can be a driving force behind scientific inquiry to find an answer. The unfortunate lack of interest from Australian toxicologists highlighted the stigma around exploring psychoactive substances in mainstream science. It was also a shocking

example of the impeding effect the current laws around these substances have on research of all kinds. Aeruginascin isn't even considered likely to be psychoactive but is illegal in Australia due to analogue laws. Neuromuscular junction blockers have important medical uses and are not common in nature, yet the legality and stigma mean this phenomenon and the compounds that may be responsible have gone unexplored for four decades.

I hope that this story inspires you to lean into your curiosity and seek answers to questions that interest you. Science is a collaborative effort, not something to be left only to people who call themselves 'scientists.' With the world's information at our fingertips and a community with so much knowledge in various fields, we can all be citizen scientists. Even if your question is one you aren't able to answer directly yourself, I encourage you to connect with experts, reach out and let your passion and curiosity inspire others to shed light on the unknown.

In the end, Swim was okay. He made it to bed after the wave of paralysis temporarily improved. He woke up with some weakness in his hands that improved throughout the day. The remaining tea was thrown out, but the same weakness affected everyone picking from the same area for several years running, suggesting the importance of an active approach to harm reduction.

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Foraging fungi, citizen science and the ethics of funga

Caine Barlow

<Meta =”Cordycep, zombies, conservation, cultivation, foraging, funga” />

Fungi are myceliating our cultural zeitgeist, the fine silky threads slowly pushing their way through the cultural strata and fruiting in a variety of narratives. Memes pointing out that fungi are fundamental to all ecosystems, articles promoting microdosing psychedelics as a better way to work, and Facebook conversations about mycorrhizae allowing the forests to talk! But on the ground, there is also a conversation about how to help protect and preserve fungi in general. Sometimes I wonder if I’ve been colonised by *Ophiocordyceps unilateralis*, and when the fruiting bodies will emerge from my head to release their spores.

Mycologists tend to be biased in favour of the ecological importance of fungi. And with good reason! Fungi helped plants spread and inhabit terrestrial ecosystems in a deeply mutualistic relationship - we know at least 90% of plants benefit from symbiosis with numerous species of mycorrhizal fungi. Fungi also break down and recycle plant debris across the forest floor and within the soil, allowing other organisms to access otherwise locked-up nutrients. Fungi also provide food and homes to a multitude of organisms, from insects to arthropods to bacteria. Those big old conks suspended on the side of trees provide food and homes for generations upon generations of critters!

Sadly, humans have been responsible for significant environmental change; we are now within a period referred to as the anthropocene, a geological time period that will reflect the significant impact humans have and continue to make on the earth’s climate and ecosystems. We have fenced in nature, cut roads and highways through forests and flattened many forests in an effort to create fields or farmland for agriculture. Rather than one long continuous forest, we now have clusters of loosely connected ecosystem islands!

Cutting down forests and removing wood from the forest floor will, in time, impact populations of fungi. We are witnessing significant changes in our climate; devastating floods, fires and other environmental changes are happening in our backyards. With reduced ecosystems come reduced populations, and with greater distance between populations, this translates to reduced gene flow. It sounds grim, but the reality of the loss of species is very real.

In various fungi foraging communities in Australia, we are often exposed to media about our field of interest from overseas. We look on with jealousy as our US and European counterparts share their baskets of foraged fungi goodies. There are many species that are used both for culinary purposes, and medicinal purpose. However, other than a few species, in Australia we lack scientific detail and instead rely on the idea of comparable species. *Ganoderma* and *Hericium* are great examples of these; for example, people collecting *Ganoderma* under the false assumption, and sometimes with false confirmation via the internet, thinking that laccate species of *Ganoderma* are reishi, when in reality they may be collecting species previously unknown to science, and with no data of their constituent compounds. As an extension to the

idea, *Agaricus* are a good example of potential toxicity in commonly foraged genera, with *Agaricus xanthodermus* known as a species that is poisonous. As another example, with all the interest around *Cordyceps*, it is important to note the lack of data on this genera, especially when papers such as “Unintentional ingestion of *Cordyceps* fungus-infected cicada nymphs causing ibotenic acid poisoning in Southern Vietnam” appear.

As it stands, mycology is the poor cousin to botany; for a long time, mycology was considered a niche part of the botanical sciences, even after fungi were placed within their own kingdom. In Australia, in large part because of a lack of funding and corresponding lack of mycologists on the ground, but is also due to cultural factors, not only mycophobia, but also the fact that fungi are for the most part hidden and elusive, mushrooms are not as easy to study as plants or animals. These together have resulted in a lack of information about fungi in Australia. As citizen scientists, we can compile information to better participate in the complex ethics of mycological life, approach fungi in a respectful manner and further our understanding of these amazing and little-understood organisms.

The careful consideration of foraging ethics is a great place to start. Being aware of the legalities around foraging; it is illegal to collect any biological material from national or state parks without a valid permit. Private land requires written permission to forage, and herbariums will not accept specimens without a signed letter stating permission - even if you have to write a letter or email to yourself stating this! Beyond legalities, there is also the care of the forest and other populations - tread carefully, mindfully, with consideration of all the other species within an area. If you are seeking ID's, a good set of photos, photos of gills in a handheld mirror, and an app such as iNaturalist are highly recommended.

Explore your own local area, become familiar with the species present and/or actively participate with local naturalist groups or mycology societies. Develop a rapport with researchers within herbariums.

Collecting digital data

The act of collecting data on species distribution has for a long time fallen on citizen scientists - volunteers passionate about recording where and when various fungi occur. In Australia the long running project FungiMap has contributed significantly to data on fungi occurrence through accepting and verifying records. More recently, iNaturalist has become a central repository for recording species, and is especially helpful given the need to be able to map out these species distributions, not only in space, but also over time. In addition to species that are less common, there is also a need to record weedy species and common species - groups often neglected for being so visible. All data is useful in understanding the population dynamics for a variety of species, tracking where they occur, or how their distribution may shift. When used in conjunction with environmental and ecological data, this geographical data can be used to predict where species may or may not occur, offering us clues of where to look for lesser known populations.

Collecting material samples

There are a couple of ways to capture fungi from the environment, either in the form of spores, or as vegetative material. Traditional collections of any given fungus include the

collection of one or more samples of a population, a drawing and written description where possible, and also include a spore print where possible. Spore prints are important as one of a number of defining features of a fungus, but are typically made on paper, and not stored in a way to best preserve the spores. Mites and small insects found on paper will in time consume them - when you get to plating out the spores from paper it's common that you grow out a variety of coloured moulds! Storing spores on glass or aluminium foil is a much better option, it is an inert media and allows longer term preservation - but it doesn't completely stop the risk of mites! At the end of the day store in sealed packets - plastic or foil or both and store in a cool dark dry location.

Part of the issue around conservation is having an appropriate representation of genetic information for a population. Not only the overall Populations but enough to be able to capture any given sub populations in detail. Is this even possible? It is a complicated question, especially given the values we may hold for environmental protection, or the potential to breed, or gene mine, economically significant genera.

For the proper conservation of a species, we require genetics across a population. In the long term, spores are certainly a better way to preserve populations genetics, given that it is very difficult to maintain a large culture collection over time. But also for the numbers game. Spore prints allow the collection of genetics across the population. The problem here is that spores do have a limited lifespan, depending on species, somewhere between five to ten years. That twenty year old Amazonian print that might have fallen out of a book is a novel curiosity but very likely way beyond rescuing.

But let's say you are on private land with permission, and you do find something of interest. Rather than disturb the population, it may be possible to culture a specimen. It is possible to sample from a single mushroom, or with limited material, even a tiny part of a specimen. A sample can be obtained by tissue culture, spores, or a small part of collected mycelium. To obtain a clean culture may require some patience and persistence, maybe being somewhat creative, but invariably using good equipment and good aseptic technique.

Cultivation

If you are looking to cultivate, then a culture of a single genetic individual is enough. For breeding, ideally, you would require a few cultures from different individuals in order to help select for desirable features; collecting from locations with enough distance to capture different genetics present within a population. Then using techniques such as the dilution, single spore isolates, and the long process of combining monokaryotic mycelium, and growing to sporocarps (mushrooms) in the same way you would grow out plants to select for desirable features.

Tissue cultures result in a culture that is one genetic individual, and in no way representative of the population at large. Different methods have their benefits and represent different aspects in the process of working towards the goal of conserving a species. The making of a tissue culture allows us the opportunity to begin to understand the cultural requirements of a given species, helping us to answer questions about how selective are the needs of a given species, does it require media based on its natural preferred substrate, or does it happily grow across a variety of media? It also allows us the opportunity to attempt to fruit the mushrooms, identifying the range of growing conditions.

Living collections

Herbariums have for a long time been responsible for managing the dried collections of various plant populations and alongside botanical gardens, act as centers of conservation. Botanical gardens play this role by growing living samples, as well as by assisting in collecting and preserving seeds from wild populations. While herbariums contain collections of dried fungi, very few have the capacity to manage culture collections, and the idea of creating a living funga garden is perhaps not yet fully realised.

Given the increasing loss of plant and fungi species, how do we contribute to the conservation of populations and their genetics? Care needs to be given not just to the overall populations, but also subpopulations. There are a lot of questions here, as what we see as useful features of a species worth protecting may instead be a reflection of our cultural bias, rather than what reflects the real changes a species may be undergoing. We lack the perspective of the time frame that is appropriate for understanding the evolutionary process a species may be undergoing. We have been present in most ecological systems for hundreds of thousands of years, but in that time period we have dramatically altered the trajectory of every species.

We see it in numerous plants, where breeding has manipulated a plant beyond its environment, where human intervention is needed to propagate a plant. *Psilocybe cubensis* is a species in a similar position, with some varieties becoming mutated beyond necessity - mushrooms without gills get a little unusual! - hence there is a lot of interest behind wanting to understand the wild populations of a species to breed back in beneficial genes. Regardless *P. cubensis* strains continue to be selectively bred for potency; the mushrooms our ancestors may have stumbled upon while starving on a barren plain look very different from those growing in a psychonaut's basement.

Selective pressures are also interesting. *Psilocybe weraroa*, for example, poses an interesting conundrum. Why would a species become secotioid, or truffle-like? Sharing a common ancestor with *Psilocybe subaeruginosa*, *P. weraroa* retains a closed cap as a mature mushroom - the gills have apparently lost the ability of ballistospory, i.e. the ability to eject spores from their gills. Instead, it is thought that selective pressures from land-dwelling birds or arthropods has resulted in spores being spread through predation. By resembling a berry, a mushroom becomes better adapted to its environment - all species are undergoing a similar process. How do we choose to conserve a species, and what makes a species worth preserving, against so many little-known or undiscovered species?

In time how will fungi respond to the selective pressures inherent within our modifications of the physical earth, its environments, and climate. Many questions need to be asked about mycological populations, who gets to thrive and who gets to survive. Through citizen science and connection with our environment we can begin coming up with some answers... or maybe that's the mushrooms trying to colonise you too.

A species description and reference guide for *Psilocybe subaeruginosa*

Caine Barlow

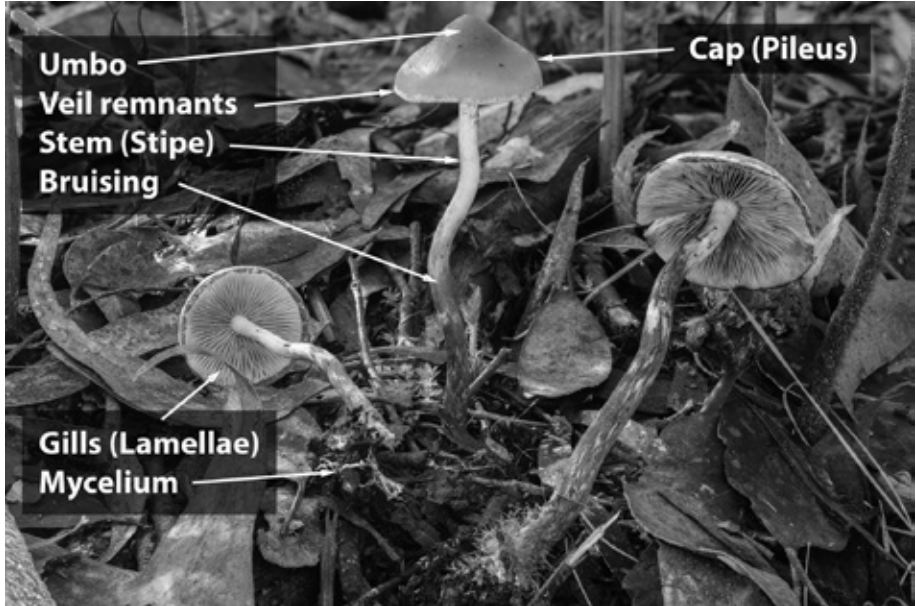


Figure 1. Important features to aid in the identification of *Psilocybe subaeruginosa*.
Photo by Tannar Coolhaas

Psilocybe subaeruginosa (Cleland 1927)

(*L. aeruginosa*, full of copper rust; sub, like the species *Stropharia aeruginosa* (Curt.) Fr.)

Autumn in southeast Australia marks the beginning of fungus season; chilly mornings, thick layers of dew, and the appearance of a variety of mushrooms. Among these mushrooms is the species, *Psilocybe subaeruginosa*. Their beautiful caramel brown cap and vivid chalk-white stem with blue markings make *P. subaeruginosa* a very photogenic species. A feature of both *P. subaeruginosa* and *Psilocybe* spp. more broadly are their hygrophanous caps. As the caps dry out, they can take on various mixed shades of brown through to yellow. When dry, they often take on a golden hue, hence the confusing common name “Gold Top” - this name is used interchangeably based on locality as it is also used to refer to *Psilocybe cubensis*. Common names for *P. subaeruginosa* include “Sub” or “P.sub”.

Habitat

Psilocybe subaeruginosa is a temperate saprotrophic mushroom thought to be endemic to Australia. This species is found in the southern parts of the continent, in Tasmania, Victoria, South Australia, New South Wales, in a small pocket of south-east Queensland, and as an



Figure 2. *Psilocybe subaeruginosa*.
Photo by Tannar Coolhaas

species, often being found on the forest margins, disturbed areas, or the edge of trails growing singly or in groups. *P. subaeruginosa* are known to grow on the fallen debris of bracken fern (*Pteridium sp.*), manfern (*Dicksonia sp.*), and tea tree (*Leptospermum sp.*). These mushrooms also occur within pine plantations (*Pinus radiata*), where they grow on well-decomposed pine mulch, buried woody fragments, and the occasional pinecone.



Figure 3. *Psilocybe subaeruginosa* growing in Eucalypt bushland.
Photo by Jonathan Carmichael

introduced species to south-west Western Australia.

In general, *P. subaeruginosa* favours the oceanic climate of south-east Australia, where it appears from late March to mid-April following a consistent drop of temperatures below 8 °C, and heavy dews. This species also occurs in drier regions with a Mediterranean climate, where rainfall is required to sufficiently moisten substrates before they can grow, with the season starting around early May. The season extends through to July or August.

Psilocybe subaeruginosa habitat is primarily wet or dry sclerophyll forest where they grow among, but are not limited to, eucalypt debris and clumps of grass. They tend to be an edge



Figure 4. *Psilocybe subaeruginosa*, large clusters. The blue bruising illustrates how the common confusion with *Cortinarius spp.* can occur. Photo by Tannar Coolhaas



Psilocybe subaeruginosa have the potential to be weedy and are often found growing in parks and gardens. *P. subaeruginosa* readily myceliate woodchip piles which are used for mulch on urban garden beds. A distinctive feature of this species when growing among woody debris is the thick, white, rhizomatic mycelium that “runs” through the substrate and can spread large distances.

Figure 5. *Psilocybe subaeruginosa*. Photo by Tannar Coolhaas

Species Description

Cap: 1-6 cm in diameter. Conical becoming convex, with age upturned, sometimes undulating, often with a small acute umbo. Hygrophanous, Dark to light caramel brown, as the cap dries they become light brown or golden brown, sometimes pale yellow or cream. The edge of the cap is often striate, inturred when young, occasionally with bluish-green blotches. A useful distinguishing feature is that the cap has a separable pellicle - a gelatinous layer that can be peeled off.

Gills: Adnate to broadly adnexed, moderately close, white to pallid brown becoming brown-grey.

Stem: 5-10cm long, 5mm wide, white, often speckled greenish-blue, becoming dark greyish-brown, slender, often hollow, fibrous. The base is often swollen, sometimes with a mass of white mycelium. When waterlogged, the stem turns brown-grey.

Partial veil: Cobweb-like white veil when young, occasionally leaving faint traces of a white ring around the edges of the cap.

Spore print: Purple-black. In very rare cases, spore prints can be brown due to a mutation that inhibits the purple pigments.

All parts of *P. subaeruginosa* will bruise blue where damaged.

It should be noted that this species is incredibly variable in its appearance, with caps appearing in a variety of shapes and shades of brown to yellow. The stem can vary in thickness and length, sometimes growing straight and other times twisting. *P. subaeruginosa* can be confused with various toxic genera that look similar and grow in the same habitat.



Figure 6. A closeup of the separable pellicle of a *Psilocybe semilanceata*. Photo by Caine Barlow



Figure 7. *Psilocybe subaeruginosa*, closeup of the gills. Photo by Tannar Coolhaas



Figure 8. *Psilocybe subaeruginosa*, closeup of the cap with the partial veil. Photo by Beau Meister

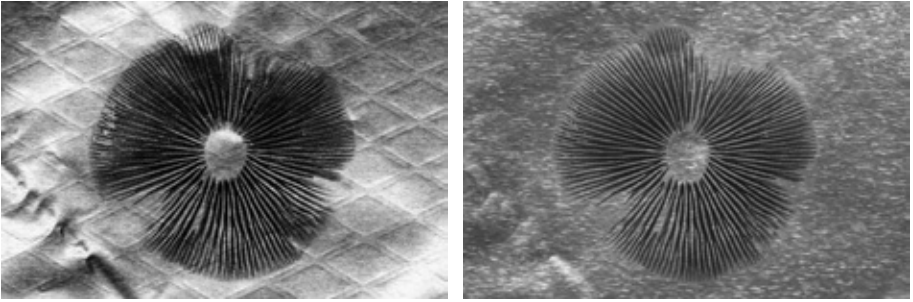


Figure 9. Closeup of a *Psilocybe subaeruginosa* spore print. To highlight the contrast of the black/purple colour of the spore print, the spore print is lit from above on the left, and lit from behind and or the side on the right.



Figure 10. *Psilocybe subaeruginosa* from Cleland (1934). Illustration by E.R.C

History

The species *P. subaeruginosa* was formally described in 1927 by mycologist John Burton Cleland, but little interest was paid to the species until the 1970s. Articles from the Sydney Sunday Telegraph and the Canberra Times in 1969 reported that people were consuming *P. cubensis* in southern QLD and northern NSW for their hallucinogenic effects. In 1970, Picker and Rickards identified that the *P. subaeruginosa* contained psilocybin.

In 1992 Chang and Mills compared the species *P. subaeruginosa*, *P. australiana*, *P. eucalypta*, and *P. tasmaniana* and made them synonymous, merging the four into the single species *P. subaeruginosa*. In 1995, Johnston and Buchanan removed *P. tasmaniana* from this grouping but otherwise maintained this synonymy. The synonymous grouping has been debated by many, including Paul Stamets (1996). Given the variations in morphology across its range in south-east Australia, there are now calls for a review of the species.

There is no recorded traditional consumption, or taboo, relating to *P. subaeruginosa* by First Nations Australians. Psilocybin has a long

history of consumption throughout a variety of Central American cultures but was not known to the public until popularisation of psilocybin mushrooms in the late 1950s (Wasson, 1957). The first published Australian reports of *Psilocybe* consumption were anecdotal reports of hippies and surfers picking *P. cubensis* (Allen, Merlin and Jensen, 1991). There is currently growing public interest in psilocybin, relating to results of early-phase clinical trials. These results suggest that psilocybin-assisted therapy may support significant and sustained symptom relief in patients suffering from depression, anxiety, substance-use disorders and obsessive-compulsive disorders (Bright and Williams, 2018).

Pharmacology

Psilocybe subaeruginosa are among the most potent *Psilocybe spp.* Psilocybin content by dry weight is reported to be between 0.06% - 1.93%, with psilocin being between 0.0% - 0.17% (Perkel, 1980). It is suspected that the species contains additional indole alkaloids, including baecocystin, nor-psilocybin, aeruginascin, and monoamine oxidase inhibitors (MAOI).

The consumption of psilocybin- and psilocin-containing fungi often results in psychoactive effects commonly associated with the “classical” psychedelics. Effects generally occur rapidly (10–30 minutes) and include sensory changes that may be visual, auditory, and/or tactile. An altered sense of time and space, and feelings of euphoria are common. Other symptoms may include confusion, anxiety, ataxia (loss of coordination), pupil dilation, nausea, vomiting, parasthesia (a prickling sensation), tachycardia, hypertension, cardiac arrhythmias and myocardial ischaemia (reduced blood flow to the heart) (Pouliot and May, 2021; Erowid, 1997).

The same symptoms may be caused by a number of psilocybin- and psilocin-containing species not limited to *Panaeolus cyanescens* (= *Copelandia*), *Panaeolus foenicicii* (= *Panaeolina*), and *Psilocybe cubensis*.

Safety

Wood lover paralysis: Wood lover paralysis involves muscle paralysis occurring after consuming *Psilocybe spp.* that grow on wood, including but not limited to *P. subaeruginosa*, *P. azurescens*, and *P. cyanescens*. Some people report experiencing a loss of muscle strength and motor control that can persist into the following day. There is currently no known explanation.

Wood lover paralysis should not be confused with the overwhelming effects of a strong psilocybin dose and can occur even at low levels of psychedelic intensity. Wood lover paralysis is a distinct physiological effect. Fortunately, the effect is known to be temporary, usually wearing off after 24 hours. For the unprepared, this paralysis can be an anxiety-inducing experience.

Psilocybe subaeruginosa lookalike species:

Galerina spp. Caramel-brown cap, brown stem with an annulus. Rust-brown spore print. Poisonous, potentially deadly.

Hypholoma fasciculare. Grows in dense clusters, brown cap with a distinctive green around the margin. Purple-black spore print, poisonous.

Cortinarius sp. Various *Cortinarius spp.* are reported as lookalikes, often from the blue colour that fades over time, resembling blue bruising. Rust-brown spore print, poisonous.

Leratiomyces ceres. Orange-red cap, veil remnants at the margin and on the surface. Greyish gills. Stem orange-red or pale yellow in colour. Purple-black spore print, poisonous.



Figure 11. Group of *Leratiomyces cereus* (top) and *Psilocybe subaeruginosa* (below) in very close proximity.

Photo by Konan Farrelly-Horsfall

Legal issues

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) the removal of any biological material from public land without a collection permit is illegal and may result in a fine. There is the possibility of an additional offence if police are notified.

Psilocybe spp. contain psilocybin and psilocin, and both substances are classified as Schedule 9 substances. Being found in possession of psilocybin-containing mushrooms is illegal in Australia and may lead to a fine and criminal conviction, with the possibility of jail time. Cultivation is considered the manufacture of a Schedule 9 substance.

Emergency assistance

If you experience an emergency in Australia, always phone 000. Information about poisoning can be accessed by phoning the national poisons hotline on 131 126.

To view this and other EGA reference guides in full colour, please visit www.entheogenesis.org/ega-resources

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Harm reduction resources

<https://www.betterhealth.vic.gov.au/health/healthyliving/fungi-poisoning>

<https://www.erowid.org/plants/mushrooms/mushrooms.shtml>

<https://dancesafe.org/magic-mushrooms/>

Glossary

P.	<i>Psilocybe</i> .
Sp.	Species - singular.
Spp.	Species - plural.
Myceliate.	To colonise.
Spore print.	Made by placing mushroom cap gills down on a surface.
Hygrophanous.	Colour change in response to water loss or absorption.
Annulus.	A ring around a mushroom stem.
Adnate.	Gills mostly attached to a mushroom stem.
Adnexed.	Gills narrowly attached to a mushroom stem.
Cartilaginous.	Tough or fibrous texture.
Conical.	Cone-shaped.
Convex.	Smoothly rounded.
Undulating.	Moving smoothly up and down.
Umbo.	The raised centre of a mushroom cap.
Pellicle.	The outermost layer of a mushroom cap.
Striate.	Ridges in a mushroom cap caused by pressure from mushroom gills.

Disclaimer

This document cannot cover all information regarding this diverse area of study. This document is only a starting point and should be used in conjunction with other evidence concerning ethnobotanical plants, fungi and related compounds.

Ethnobotanicals and ethnomycologicals have risks and benefits and should always be treated with caution and respect. Some practices and ideas associated with the use of ethnobotanicals are embedded in cultural and religious traditions.

Research, due diligence, and caution are essential. Ensure to understand local laws, traditions, and sustainability before working with any ethnobotanicals



Figure 12. *Psilocybe subaeruginosa*, Artistic photograph by Jonathan Carmichael



Figure 13. *Psilocybe subaeruginosa*, Photo by Tannar Coolhaas



Figure 14. *Psilocybe subaeruginosa*, Photo by Jonathan Carmichael



Figure 15. *Psilocybe subaeruginosa*, Photo by Beau Meister

MDMA research down under: What does a decade of persistence look like?

Steve Bright

The potential therapeutic utility of 3,4-methylenedioxymethamphetamine (MDMA) was first described publicly by Alexander ‘Sasha’ Shulgin and David Nichols (1978). By 1986 there were numerous anecdotal reports of MDMA being an effective pharmacological adjunct to psychotherapy in couples therapy and for people with posttraumatic stress disorder (PTSD) (Greer and Tolbert 1986). However, like psychedelics, the potential of MDMA-assisted psychotherapy was not fully realised after the drug was prohibited internationally in 1987 due to concerns about increased recreational use.

In the past decade, there has been significant global growth in clinical trials of MDMA. Most of this research has been funded by the Multidisciplinary Association for Psychedelic Studies (MAPS). MAPS was established by Dr Rick Doblin following the prohibition of MDMA with the primary goal of making MDMA a medicine. This was, after all, the recommendation of Judge Young, who in 1986 was charged with the task of examining the aforementioned concerns about increased recreational use of the drug given the emerging evidence of its therapeutic utility.

Following six MAPS-sponsored Phase 2 clinical trials of MDMA-assisted psychotherapy, the US Food and Drug Administration (FDA) provided MDMA with “breakthrough therapy” designation in 2017 and compassionate access in 2019. This compassionate access is similar to Australia’s Special Access Scheme-B, which is overseen by the Therapeutic Goods Administration (TGA).

In 2021, MAPS published the results of the first Phase 3 clinical trial of MDMA-assisted psychotherapy for PTSD (Mitchell et al. 2021). The data from this research showed that MDMA-assisted psychotherapy was effective, with 67% of participants in the MDMA condition no longer meeting criteria for PTSD. An additional 21% were observed to have a clinically significant reduction in PTSD symptoms. Recent research has also shown that MDMA might be a promising treatment for alcohol use disorder (Sessa et al., 2021), and social anxiety among adults with autistic spectrum disorder (Danforth et al 2018).

Up until 2022, Australia had yet to commence research on MDMA-assisted psychotherapy. Not engaging in such research places Australia at-risk of not having the personnel, infrastructure or other resources necessary to provide MDMA-assisted psychotherapy, should the TGA approve use of the drug as a medicine following a similar move by the FDA. This lack of local research is not from a lack of effort.

In 2010, Dr Rick Doblin was a keynote speaker at an EGA Conference and presented impressive data from MAPS’ first Phase 2 clinical trial of MDMA-assisted psychotherapy for PTSD. A workshop for researchers interested in psychedelic science was held after the EGA conference, where Rick convinced attendees that Australia could make a contribution to global MDMA research effort, pledging MAPS funding for an Australian MDMA study. Directly

following this meeting, Psychedelic Science in Research & Medicine (PRISM) was formed with significant enthusiasm by Australian researchers.

PRISM's journey to establish clinical trials of MDMA-assisted psychotherapy in Australia has been challenging. Our first effort to replicate MAPS' research was rejected by an ethics committee in 2012. This highlighted to us the differences in conducting research within the Australian healthcare system versus the US healthcare system. Our second bid in 2015 was vetoed due to stigma and university conservatism.

Then, in 2018, Edith Cowan University (ECU) supported me to lead a small trial of MDMA-assisted psychotherapy. The purpose of the trial was to demonstrate that we had the personnel and infrastructure to provide MDMA-assisted psychotherapy with the aim of Perth then becoming a site for MAPS' Phase 3 clinical trial.

ECU and MAPS supported myself and my co-therapist (Dr Petra Skeffington) to attend the MAPS MDMA-assisted psychotherapy training held in the Netherlands for European therapists who were going to take part in a Phase 3 clinical trial. This study aims to provide the data required by the European Medicines Agency to consider making MDMA a medicine. Both Petra and I agreed that it was "hands down" the best training we have ever participated in.

However, by this stage, my university's appetite to be running such a world class study was hampered by its lack of adequate research governance to oversee a clinical trial. Practically, this meant that I could not get permission to submit my research proposal to the ethics committee. During the training, Rick helped us brainstorm "work arounds", including me personally being the TGA sponsor of the trial. This would have made me liable if anything went wrong in the trial. I was advised by colleagues that I should not have to take such a personal risk. Even ECU advised me against it since the university lawyers believed the university would still be liable.

I commend ECU for developing the research governance processes that eventually allowed me to submit the application for ethical review in 2019, and in 2020 we finally had the "all clear". Or at least it would seem.

We registered the trial with the TGA and the Australian & New Zealand Clinical Trials registry. The next steps were to secure the transportation and storage of the MDMA, which MAPS kindly donated to PRISM. In our 2019 protocol, we had proposed using the spare MDMA Rick had from the Phase 2 trials, though the MAPS staff preferred that we use the very expensive current Good Manufacturing Process MDMA they were using in the Phase 3 studies. This required an amendment to our ethics application. It also required a state permit to store and administer MDMA and an importation permit.

Our first state permit was rejected as the safe in which we proposed to store the MDMA did not meet the Western Australian Department of Health requirements. PRISM supported our local pharmacist to purchase and install a special "MDMA" safe. And on the 7th of July 2021, myself, Petra and our pharmacist were granted permission to be in possession of up to 35 grams of MDMA. In early 2022, we successfully imported the MDMA. And the first Australian received MDMA-assisted psychotherapy in August 2022.

More than a decade of persistence has resulted in PRISM, now a not-for-profit company

limited by guarantee (PRISM Ltd.), becoming the Australian leader in MDMA research. While the delays have meant that we will not be able to be a site in MAPS' Phase 3 research, we hope to create a smoother pathway to MDMA clinical trials for other Australian researchers, such as those being proposed by the University of Melbourne, Monash University and Emyria Pty Ltd.

I would like to acknowledge that none of this could have occurred without the support of PRISM's president, Dr Martin Williams, the ECU staff that have supported us, the psychiatrists involved in the study who have donated their time to the project, the staff at Abbotsford Private Hospital who are providing beds for the overnight stays – and of course Rick and the MAPS team for not only inspiring us, but also supporting us on this long and arduous journey.

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'Cannabis'
Cannabis sp.
 e.g. *C.indica*,
C.satīva
 (THC)



'Yucca vine'
Panicum sp.
 (Harmful)



'Mimosa'
Mimosa sp.
 (Harmful)

Community participation and science

Emma Corro

In 2007 the US company Mary Kay was granted a US patent for an extract made of the Kakadu Plum. This is despite millennia of use by Aboriginal people as both food and medicine. The company was later denied an Australian patent but only after years of opposition by Aboriginal organisations. If it had passed, it could have stopped Traditional Owners from profiting or even using their own traditional medicine.

There are countless other examples, both in Australia and overseas, of companies deliberately targeting and patenting traditional medicines. With interest from pharmaceutical companies in psychedelics, this threat is only growing. It's not just medicines where this is a problem. There has also been a surge in companies patenting basic biological processes of fungi, such as the ability for mycelium to bind a substrate. (Is this really something we need to accept?)

The Convention on Biodiversity is an international treaty aimed at conserving biodiversity, sustainable use of biodiversity, and the fair and equitable sharing of its benefits. The Nagoya Protocol is a supplementary agreement to the treaty, which is aimed at ensuring that genetic resources are taken and used with *informed consent*. Australia signed and ratified the Convention on Biodiversity. Australia also signed the Nagoya Protocol; however, it was never ratified by Parliament. This has left Australia in a legal grey area where we are technically not bound by the protocol; however, most government and research organisations still abide by it. Most Biopiracy has been particularly prevalent among US companies, so it's not surprising that it's the only nation on Earth that hasn't signed the Convention.

Over the last few years, there has been an upsurge in interest in genetic sequencing among mushroom hunters and amateur mycologists. This is wonderful to see. It shows how much the community is capable of contributing to science. However, the downside is that hundreds of specimens of native fungi are being sent overseas for sequencing with no safeguards in place to ensure their fair use. Not having a go – I've done it too. While, at the time, this was the easiest method of getting sequencing done, the lack of safeguards such as permits and formal agreements with overseas laboratories means that any of those samples could be used for anything, including patenting medicines derived from them. It also meant that the data could not be used by Australian researchers associated with institutions, as most institutions consider how the specimens were handled a violation of the Nagoya Protocol.

In order to collect samples for scientific research, it is necessary to have the landholder's consent. Depending on the circumstances, this can range from a simple email to a drawn-out permit application. This process can be arduous, and many people have an understandable aversion to what they see as pointless rules. However, in this case, the system is not designed to hinder scientific progress or community participation but to protect our environment and Indigenous knowledge. By taking a cowboy approach and bucking these rules, we are continuing the colonialist legacy of disrespecting the environment and stealing from Indigenous peoples. *Consent is integral to good science, regardless of who is conducting it.*

Biosecurity is also a growing problem, particularly with organised attempts to introduce non-native *Psilocybe* species to new areas. The idea of providing free medicine to people is admirable. But introducing non-native species (including Australian species overseas) can threaten populations of native fungi, including closely related species that may be lost due to hybridisation. Similar issues are now cropping up with people importing/exporting other fungi with properties such as the ability to degrade plastic. Again, the aim of reducing plastic waste is a good one, but what if an unintended side effect ends up being the extinction of native species?

Replicability and peer review are fundamental to good science, regardless of its relationship to institutions. Peer review is often associated with the process of publishing journal articles. Still, it can be as simple as having another person in your field look at your work to see if it makes sense (yes, posting it on Shroomery in a kind of peer-review). In the case of genetic sequencing, replicability generally means having an associated herbarium/fungarium specimen so that other people can see if the species was identified correctly, re-sequence, or do any further necessary research. As most herbariums abide by the Nagoya protocol (even if our government has shirked formally ratifying it), this means that people need written permission from landholders to lodge specimens.

Peer review also leads us to the question of *who* we listen to. Australia has scientists who have decades of experience studying our local fungi. But when most people are introduced to mycology through social media, the appeal of the messenger is often more important than the quality of science. We all want to hear that mushrooms will save the world, right? We do need the inspirational stuff, but it's also a much easier message to sell than "it's complicated...". Travelling the world and getting a new species of *Psilocybe* named after you looks a bit cooler than spending a couple of decades volunteering for your local Landcare. But that isn't really any reflection on which is the more valuable work.

This isn't anything new. Traditionally most of the world has been excluded from taking part in science. Expensive equipment and expertise are concentrated in elite institutions. Most people don't have the time or money to engage meaningfully. And even if an individual manages to get the education they need to participate, there are still many more hurdles for people who are not from the right background, race, gender, etc. It's still too common for research not to benefit the communities where it is taking place, particularly in Indigenous communities where knowledge about the natural environment is often extracted and results never even communicated back again.

At the same time, science does have its egalitarian side. For all the popular view of science as being carried out by individual (usually white male) geniuses, it is fundamentally a collective endeavour. Most scientific questions are way too big for one individual to solve. Systems such as peer review, open access databases, and even the way many laboratories and institutions are run are all designed to facilitate a collaborative approach.

In recent years citizen science is becoming increasingly popular, with a lot of funding going towards projects that incorporate this. This has been driven partly by the need to gather large amounts of data simultaneously as natural sciences, in particular, are being defunded. More recently, there has also been the recognition that involvement in science has social benefits such as improved community education, social connectivity, and health.

However, this model has been rightly criticised for viewing citizen scientists as merely data collectors rather than full participants in the scientific process. This attitude is not only patronising and exploitative but also limits what can be achieved. Involving the community in the whole scientific process isn't just about fairness. It makes science better. Often, it's the people on the ground who come up with the best questions, the ones that really matter for the community and the environment.

The DIY science of the psychedelic community has long been the opposite of this top-down version of citizen science. Science, in general, is rapidly becoming more accessible with technology becoming cheaper, projects such as sci-hub making journal articles free to the public, and many new community laboratories opening up.

The potential flipside, though, is that in taking science out of traditional frameworks, it's easy to recreate power structures, at worst, the kind of power structures that existed a couple of hundred years ago when science was a hobby for the wealthy. Again, this isn't just a problem of equity. It's about good science. A lack of peer review by the right people has meant the sequencing we do isn't always of the highest standard, for example, focussing on incorrect areas of the genome for certain types of fungi.

Obviously, we need more opportunities for all people to participate in science. Concretely this means access to education outside the mainstream, material resources, and building links between professional and unpaid scientists and also whole communities. Making it possible to get on collecting permits is also important; if you are trying to do this, I suggest contacting your local Landcare, field naturalist club, or mycological society.

But genuine participation also involves responsibility. When we involve ourselves in science, we all end up making choices about what we consider acceptable. Better to make them consciously. So, I think it is worth considering the structures that exist in science, what we think is worth keeping, and what should change. In particular:

- Is research replicable?
- Are we subjecting ourselves to peer review?
- Are we presenting things in all their messy complexity or just a popular story?
- Is science accessible to the whole community or just privileged individuals?
- How do we ensure research is done ethically?
- How do we hold more corporate entities accountable?
- What is a project's responsible stance on indigenous IP?
- How can we best include and respect the significant traditional custodians and knowledge which have supported the environment which we are passionate about?
- Are we asking for consent, and are we willing to take no for an answer?



Plant Tissue Culture: Explant Initiation and Sterilisation 101

Darklight

Read this guide a couple of weeks before you try it. Ponder it. Then read it again a few more times. Keep good notes. Do the math - preferably during the planning phase.

The techniques described here are for plant tissue culture of vegetative material - nodes, stems, leaves - which are being initiated into culture from nursery or field plants.

As a beginner, work with a plant you have a lot of, don't mind killing, that sterilises easily (isn't hairy, woody, waxy, densely branched, and doesn't have lumpy bark). There is no shame in starting simple. If you're still learning a technique, don't use a rare, difficult, or valuable plant unless you're prepared to fail and to set back the growth of your much loved source plant by over-pruning.

You need enough starter material for statistical significance and to make it worth your while to set up. Initiating new tissue culture stock from donor plant material can have a high attrition rate. 70% contamination from nursery or outdoor stock is not unusual. 98% contamination in some species is normal. Other species are hard to disinfect and just plain disgusting.

Only take 30% of the best plant material for any single experiment. Leaving enough material for next time in case of mistakes or protocol changes is important. It is entirely normal to need to re-run an experiment.

Anything you cut off your parent plant to stick into culture media is called an explant. A cutting becomes an explant the minute you separate it from the donor plant. Your explant could be a leaf, a single node, an areole, an embryo, a meristem, etc. Your explant can continue to be called an explant - no matter what it looks like, no matter what you turn it into - until it grows up and is strong enough to live outside the lab on its own. "Explant" is a broad, umbrella term that lets us technically differentiate between what's in the lab and what's outside in the nursery.

I don't like to start a tissue culture project with anything less than 10 successful, clean explants. When initiating a new species to culture I make sure I sterilise about 25 explants, each in its own jar containing 20ml media (500ml media total). Housing a single explant in each jar prevents contaminated plants from infecting uncontaminated ones.

I make sure I have about 80 viable plant parts pre-treated and available for excision prior to starting work on a new species. It might take one tree or ten small potted plants to get that number. I take 25 explant cuttings to initiate into culture each time, leaving the rest of the parent plant undisturbed in case I need to re-run the experiment. The remaining five plant parts are usually lost because they fell on the ground while I was cutting them. Mistakes always happen!

Success is possible with less starting material, but it's easier to throw out excess quality material than it is to find more sterile material!

Parent plant stock selection

Careful parent plant stock selection is the best way to ensure success. It's also a step that's often ignored in tissue culture.

Your parent plant needs to be in vigorous, active, vegetative growth. It's possible to put some species into culture when they're flowering, but for most species, flowering is a time of hormone production that can affect their ability to readjust to culture conditions. When plants are flowering, they're trying to have sex. Often, like us, they resent the intrusion.

You can force active vegetative growth out of season, but the easiest success will come if you work with the seasons - you may even be able to force extra new growth if you time things right.

Vigour is an important though scientifically indefinable consideration when selecting plant material for culture. Theoretically, it is possible for a single plant cell to regenerate into an entire functional individual (totipotency). In practice, except for a few well studied species or cultivars, early success is unlikely, even if using protocols from peer reviewed publications. Pre-preparation, excision, sterilisation and culture initiation are incredibly stressful to plant material, even under optimal conditions. Plants introduced to culture will take time to adjust to their new conditions and routine.

Healthy, actively growing plants are vigorous and likely to harbour fewer pathogens that could inhibit the plant culture process.

How much to cut from the parent plant?

If you cut too much explant material for culture you can overwhelm the sterilising solution. A larger amount of material will contain more pathogens than the sterilising chemicals have to kill. A smaller amount of explant material could be traumatised and confused just by the act of cutting and handling or by the harsh sterilising solution. For any new species you haven't worked on before, determine in advance how much plant material you would consider a viable culture explant and add another 5-10mm to that figure at each cut surface.

After sterilisation, cut the explant to the size you like. During sterilisation you'll need the extra biomass as a buffer to drink up the sterilising solution but also to make sure the explant you want to culture isn't full of residual sterilising fluid. Explant size and form can differ between species, cultivars, and culture types. If you're uncertain, do a web search to see what types and sizes of explants others have used for their work with the same or a similar species. For some species with no culture or propagation history, this estimation is a plain old guess.

Guessing is *always* valid as long as you keep good notes. Further words supporting your barefaced guess and outlining why you were thinking like that, even though it sounded illogical at the time in the morning, will be incredibly helpful later. Especially if you turn out to be right!

The actively growing plant tips (apical or axillary meristems) grow new, cleaner cells faster and usually contain fewer pathogens than the rest of the plant, giving an advantage in culture. This growth usually happens in the mid 2-3 mm of the apice (where the new leaves emerge from - visible only under a microscope in some species). Be wary - cutting finely and forceps handling can both cause trauma at the cut site.

Explant selection size is thus a balance between having the cleanest part of the plant, having enough and sufficient diversity of vigorous plant material to support fresh growth, whatever contaminants the plant natively contains, the culture regime you have planned and any physical damage you need to do to the plant tissue to obtain and sterilise and re-cut that portion.

The best time to excise plant material for culture is first thing in the morning when the sun is up, and any dew is freshly dried or drying off.

I often pretreat my ex vitro parent stock 14-28 days prior to taking explants:

- Place potted plants in an appropriately lit, well ventilated area. Light and good airflow reduce contamination.
- Force new growth - prune and/or fertilise so that fresh new tips are available as donor material.
- Water at soil level only where possible. Overhead watering can encourage contaminants and the bugs that carry contaminants.
- Application of systemic fungicide (please pre-test this to make sure your fungicide is tolerated for your species) at 7 days prior to starting culture work can be useful if fungus is an anticipated issue.

When it's finally time to cut: Time to cut

Read your workflow list and have all equipment prepared. Only prepare sterilising solutions on the day they're to be used.

On a fine, sunny morning:

- Put some clean water in a clean container.
- Spray your scissors with 70% ETOH (70% methylated spirits is fine).
- Cut your parent stock slightly longer than you want them in culture. Place cut ends into water immediately (don't take more than 30% of your available donor material).

Head to the lab. Put the flow hood on and set up for work.

- *Optional.* 30 – 60 seconds in sonicator (aka jewellery cleaner, *rtm [Read The Manual]*) in water with a drop of unscented detergent. Sonication causes some of the bigger contaminants to dislodge, while the unscented detergent helps prevent air bubbles and penetrates any waxy or hairy layers. Some plants do well with sonication, but some get punched full of holes which can wreck the culture process. Pre-checking this is advised.
- Drain aseptically (this can be done outside the flow hood, in a clean place).
- 30 – 60 seconds in 70% ETOH with a drop of unscented detergent. Swirl gently.
- Drain aseptically.
- 1-10 minutes in a sealed container of sterilising solution (1 tablet Milton Baby Bottle Sterilising tablet per 100ml water + a drop of unscented detergent). Swirl gently.
- Move your plant material/ solution container to the flow hood.

Everything from here on in is sterile work and is to be done aseptically in a flow hood or still air box.

- Drain the container, place sterile material on sterile paper towel, and air dry in the flow hood before transferring to container/ petri dish for further excision and culture initiation.

The beauty of Milton baby bottle sterilising tablets is that:

- you can tell if the active ingredient in the Milton tablets has expired because the wrapper is blown up. Bleach expires too - it has an expiry date on it that hardly anyone notices until it stops working.
- It's harder to make dispensing errors using the standard Milton dilution (1 tablet per 100 ml water). Bleach comes in a range of different concentrations that you will need to adjust for when preparing your work. Bleach final concentration descriptions in some publications are also unclear.
- Milton tablets are way less harsh on most species than bleach - less chlorosis, less secondary wounding, etc. If you're not sure which is best, run a small side-by-side dry run experiment for bleach versus Milton tablets on a day you're not initiating cultures, and put the sterilised explants into their own small container of water. Observe after 20 minutes to see which chemical causes less damage.

All sterilising chemicals should be removed entirely from the explant after sterilisation to ensure they don't react with any of the culture media ingredients, gas your explant when you seal the culture container or pool around the explant base and become a potential home for contaminants. Milton tablet activity is inactivated quickly via air drying in the flow hood. Bleach requires rinsing in two changes of sterile water to inactivate- which is more work, requires you to have cooled sterile water ready, and is an extra step that could potentially introduce contamination.

Both Milton baby bottle sterilising tablets and standard bleach are relatively safe for human exposure. However, they're not *completely* safe. You don't want them in your eyes, probably don't want them on your clothes, and you really don't want other mammals to accidentally ingest them. Please observe all precautions and dispose of residue safely and immediately and with regard for your environment.

Here is the MSDS for the Milton tablets I use that are sold in Australia:

<https://dl2jx7zfbtwvr.cloudfront.net/msds/FIRST1075.pdf>

Here is the MSDS for two different types of bleach I have used that are sold in Australia:

<https://cdn.shopify.com/s/files/1/0490/1476/7780/files/AU-1060.pdf?v=1647475980>

Get used to reading MSDS. It really is all fun and games until you kill a pond full of frogs. Chemical formulations, brand names, and known hazards can change over time or between countries. A current MSDS for the chemicals you're using now will help you not die. You're welcome.

Deciding how long to sterilise your explant material in harsh chemicals is based on previous experience with the contaminants in the facility, the parent plant location, and sterilising this species or a related species, published protocols for related species, community advice and/ or guesswork. Use a timer when sterilising explants. Don't estimate. Flow hood time expands exponentially and has no relation to earth time.

Ideally, you will minimise explant exposure to extraneous chemicals - it stresses them. Sterilising time is a trade-off between either poisoning your plant material during disinfestation or letting it poison itself because you failed to kill all the nasty pathogens. You aim for the middle ground. The consequences of failure are the reason we leave enough material behind on the plant in case you need to re-run the work (you did this, right?).

Prior to inserting your plant material into the culture medium, you will still need to re-cut any already cut ends, dead or necrotic tissue, etc, to make sure any chlorine the donor material took up during sterilisation isn't left on the explant. Dead or dying material on culture stock just confuses the explant and is a potential site for secondary contamination via wounding. Cut just after or above where the white bits are- those are the most affected by the sterilants, and the white bits left over after sterilisation are termed *chlorotic*.

Leaving some petiole (leaf stem) on any sterile cut stems can be handy, though - they make great handles to avoid crushing stems with forceps during transfers and can help you work out which way is up when you're working in a crowded situation.

I suggest beginners use PPM (Plant Preservative Mixture) in your tissue culture media for at least your first few runs. It's a biostat - PPM disrupts key enzymes in the energy cycles of fungus and bacteria, stopping or retarding their growth sufficiently to allow your traumatised material to re-establish vigour and look after its own immune requirements.

PPM is viciously expensive to purchase but works out at about AUD\$3-\$5 per litre of media. Most species tolerate PPM well for axillary/apical culture. PPM can expire during storage, so always check the use-by date. It won't kill all contaminants - especially if you have dirty parent stock. But PPM will slow contaminants right down and buy you some time.

If your species often harbours pathogens, your culture material has really woody stems, or the publication you are working from suggests extensive contamination issues (e.g., kava, fruit trees, hardwood cabinet timber, etc.) you can benefit from making double or triple the amount of media you need and fully submerging the explant in the media for two to three days, transferring to fresh media on day three. Transfer again on day seven. Remove as much old media as possible when transferring without excessively handling the explant.

You can also reduce contamination risk during culture initiation by lowering the amount of sucrose, other sugars, and carbon sources in your initiation media. Sugar is the food that allows our plant culture to lower its reliance on photosynthesis. Sugar is also crack cocaine for pathogens, which can overgrow, overwhelm or poison the plant material you want to grow. Many pathogens double in number every two to three hours – a much faster rate than freshly cut explant material suffering transplant shock.

Reducing or removing the sugar in your culture initiation media can inhibit contamination at culture induction. Rather than using a standard MS media, where the amount of added sucrose is routinely 30 grams per litre, you might want to initiate your culture into media containing only 10 to 15 grams per litre of sucrose for the first week or two to slow any pathogen growth.

Sugar and carbon source reduction is another trade-off. Consequences can show early, depending on your plant species. Not enough sugar or carbon source and your explant can starve. If your explant material survives and is sterile on that lower amount of media sucrose during establishment, you will probably need to make sure you add a greater amount of sugar or carbon source to the next media once your explants look clean and uncontaminated.

Subculture period

A subculture period is the length of time between fresh media transfers. The average subculture period is two to three weeks between transfers. This time period is only really important for commercial or other time sensitive work, but it's great if you can reduce your subculture period to this time. It means your media is optimised for your species and desired growth type. You're fabulous, you're lucky, the laws of physics adore you, drinks are on me... but right now, we're experimenting.

In practice, a two to three week subculture period for experimental work is optimistic. Initiating cultures and transferring plants between containers is stressful for them, and most take a few days to recover. Transfer your work to fresh media after it has shown new healthy growth, before the leaves discolour, drop off, or contamination shows. This means checking your explants every day, especially while you're learning. You need to make judgement calls based on your own observations. Work with the plants you have.

Some of the species I run have a four-week subculture period in summer and a 12-week subculture period in winter. One of my plants has a 16-week subculture period. My facility has temperature fluctuations due to insulation issues and even within the facility, there are known cold and warm spots that I use strategically.

A Bluetooth temperature logger (or three) is a cheap way to determine whether temperature fluctuations are affecting your culture growth. Inkbird Bluetooth temperature and room humidity loggers are commonly used by mushroom growers, these have a phone app interface, and they're relatively low cost, especially if you can find them on sale or second hand.

Subculture period is determined by species, by the protocol or publication you're working with, and by environmental conditions such as light, photoperiod, temperature, any temperature fluctuations, container types, etc.

Don't beat yourself up about subculture periods. If you have live, healthy, sterile plants growing in culture right now and are checking your explants every day, you have the starting material required to finesse any aspect of your work. It doesn't matter whose explants are growing the fastest.

Contamination

Knowing detail about contaminations will help you make adjustments to future experiments. When contamination shows, which it probably will, you need to know:

- When contamination first showed
- Where contamination first showed
- What contamination looks like. Slimy is usually bacterial, thready is usually fungus, wrinkly is usually yeast.

Knowing these will help you make any adjustments to future experiments. We need to normalise failure and the need to re-run experiments. Too many people think failure is an endpoint rather than a standard obstacle

Using only one sterile explant per container means you haven't risked cross contaminating any remaining sterile material in that jar. Place the contaminated container aside- and before you throw it out, note down your observations. This is important.

Contamination can start to show up between two and 21 days after initiation. Have your tissue culture explant containers somewhere you can check them often - at least daily. Some contaminants are so vigorous you might not be able to work out where they came from if you don't check them for 24 hours.

Any contamination that shows up on or at, the base of the explant in the first two to five days of initiation indicates a very heavy contamination load and a need to change your sterilisation protocol or increase sterilisation time. If this happens to more than half your explants within the first five days, this is a major issue.

Pathogens that show up on or around the explant base 10 days after initiation or later indicate a lower initial contamination load. At this stage, it's just a numbers game, and hopefully, you took enough explants from your donor stock that you'll be left with a few clean, functionally sterile explants. At worst, you have enough healthy material left on your parent plant to start again (You did that, right?).

If plant contamination in all the contaminated jars looks the same (e.g., all are slimy and white), it's most likely originated from the parent stock. If your contaminants all look different (e.g. some are thready and some are different colours), contamination could have come from the parent plant stock or from incorrectly or incompletely sterilising your tools during work. Check your flow hood and sterilisation techniques.

However, if there are a lot of contaminants of different types randomly dotting the surface of your media as well as hanging off your explant, it's probably not the plant at all, and you need to work on your technique and/or test your media sterilising protocol and/ or check your flow hood is blowing sterile air at you

Yeast or golden staph bacteria contamination usually means an operator error. You're shedding on your work. Yes, you. Glove up. Ethanol is widely available. Ethanol sold as Methylated Spirits even moreso – it's available at the supermarket FFS. Nah, just kidding. Unless there's a lot of it, then I'm not kidding.

It is possible to re-sterilise contaminated material and put it back into fresh media, but it rarely works. By the time any contaminants are visible, they're well entrenched. This is one of the few hard and fast rules in tissue culture.

In this case, and that of any other scientific failure, weep for a while, write up your notes, go back to your parent stock, your source documents, and earlier lab notes, and start again.



Australian San Pedro: A classic clone catalogue

Dr Liam Engel

San Pedro are large, columnar, fast growing, and mescaline-containing cacti that grow natively around the Andes Mountains. Some argue that San Pedro are a group of over 20 different species, while others contend all San Pedro are the same species. Without engaging in taxonomy debates, it can be acknowledged that *Trichocereus bridgesii*, *T. pachanoi* and *T. peruvianus* are commonly recognised San Pedro species.

Because cacti can grow from cuttings, we have no idea about the age of the oldest cacti. Cacti can be cut and regrown (cloned), seemingly forever! Clones are special because they carry a particular heritage. The general rule amongst horticulturalists for plant names is that new names are only given to individual, seed grown plants.

A name is the signifier of the lineage and history of a plant. Some believe only a unique or 'special' plant is worthy of a new name. Strict naming rules are more in keeping with a botanical (rather than horticultural) approach, but creating rules about naming can reduce confusion when people don't maintain good records. While it is problematic when the same clone has been given two different names, it also seems rude to think that every human is worthy of a name, but every plant is not.

Typically, a new series of seedlings receives the label "pollen donor x flower donor." If the grower appreciates a particular one of these seedlings, they might give the seedling an additional name. This was the case for *T. sp.* "Neptune" from The Mescaline Garden. The seedling series of this plant is (*T. bridgesii* 'SS02' x *T. bridgesii* "SS01") x *T. sp.* "TPM". This is a bit of a mouthful, and there are other plants with the same cross name without the same unique appearance, so when I started distributing this clone, I gave it the name Neptune to make it easier to track.

The population of unique San Pedro is rapidly expanding as growing numbers of people breed and cultivate these plants. These numbers mean San Pedro names are increasingly important, but at the same time, are increasingly hard to keep track of. I think there would be many advantages to a peer reviewed registry or database to keep track of San Pedro names, but it is challenging to get the community to agree on a process of determining a valid name, as well as to submit their names to the registry.

With these registration advantages and challenges in mind, I embarked on creating this classic clone catalogue. I contacted a number of Australia's most prolific San Pedro enthusiasts, requesting a list of the unique San Pedro clones they each distributed from their gardens. This list was to only include plants of which each enthusiast was the primary guardian - mostly their own seed grown plants, but also clones obtained from deceased or lost mother plants. This resulting catalogue in which I've compiled these lists isn't perfect. There are incorrect and unrecognised species listed (e.g. *T. cataquirensis*), but without extensive genetic research these taxonomy issues can't be resolved. While I've strived to avoid double names, it is

possible a plant could be listed twice under the catalogue under the same name (e.g. the JAC plants were originally obtained from Dawson's, but their parent details are unknown). If two San Pedro are suspected to be the same, their in/compatibility for each other's fertilisation can be a good indication of whether or not they are identical clones. However, this matter is best resolved via genetic research. This catalogue is best considered a snapshot in time as we will continue to discover more about these plants, and as their growers breed and release additional clones (visit themescalinegarden.com/san-pedro-catalogue for photographs and updates). The remainder of this article is organised by the current garden location of 'mother' clone donor plants, including the Fields Cactus and Succulent Garden, Dawson's Cactus Garden, Damascus, Urban Tribes Needle Park Nursery, Shaman Australis Botanicals, Herbalistics, Trichaustralis and the personal gardens of Micromegas, Fahim Adabjou, Will M, Mark Hoffman and myself – The Mescaline Garden.

Names start a lot of arguments, but as I see it, the purpose of a name is communication. For me, names are less important than other details – that's why so many growers use numbers to label their plants. My tip for collectors starting out is to label every plant and maintain a database with further information relating to each label. Ensure to document whether a plant is grown from seed or from a cutting, and where the seed, seedling or cutting came from – the more detail the better!

Fields Cactus and Succulent Garden

The Fields Cactus and Succulent Garden was created by Ralph Fields. Ralph obtained many live cacti plants by purchasing a share in field expedition in the Americas, undertaken by Harold Blossfeld, another German botanist. Several plants from The Fields Garden have been donated to the Royal Botanic Gardens Victoria Melbourne Gardens, where many *Trichocereus* from the Fields collection can be enjoyed in the Arid Garden section.

- *T. bridgesii* "Fields."
- *T. knuthianus* "Fields."
- *T. lamprochlorus* "Fields."
- *T. macrogonus* "Fields."
- *T. pachanoi* "Fields"
- *T. pachanoi* "Yowie."
- *T. peruvianus* "Rosei 1."
- *T. peruvianus* "Rosei 2."
- *T. peruvianus* "Sausage."
- *T. validus* "Fields shed."
- *T. validus* "Fields."

Dawson's Cactus Garden

Dawson's Cactus Garden was created by Tom Dawson and Justin Gill in Bendigo during 1933. Hosting over 2000 species during its peak, The Dawson Garden was Australia's largest cactus nursery for over a quarter of a century. The Dawson Garden was purchased by new owners and renamed as Bendigo Cactus Garden in 1992.

- *T. bridgesii* "Ben."
- *T. bridgesii* "Hulk."

- *T. chilensis* “Dawson’s No. 1.”
- *T. chilensis* “Dawson’s No. 2.”
- *T. knuthianus* “Dawson’s.”
- *T. pascana* “Apache.”
- *T. pascana* “Rango”
- *T. pascana* “Red”
- *T. pascana* “Twin Peaks”
- *T. pascana* “Tom.”
- *T. peruvianus* “John.”
- *T. peruvianus* “Dawson’s No. 1.”
- *T. peruvianus* “Dawson’s No. 2.”
- *T. skottsbergii* “Dawson’s.”
- *T. sp.* “Santa Fe.”
- *T. sp.* “Sunset.”
- *T. terscheckii* “Banana.”
- *T. terscheckii* “Big Blue.”
- *T. terscheckii* “Dawson’s Long Spine.”
- *T. terscheckii* “Dawson’s Short Spine.”
- *T. terscheckii* “Gill.”
- *T. terscheckii* “John.”
- *T. terscheckii* “Mexican.”
- *T. terscheckii* “Orange Spine.”
- *T. terscheckii* “RJ”
- *T. terscheckii* “Snake.”

Damascus

Damascus creator Paul purchased seed from the Herbalistics Nursery and another unknown source ~2007. These seeds have grown into what appears to presently be Australia’s largest San Pedro collection when measured by sheer mass of plant material.

- *T. bridgesii* “Jaws.”
- *T. bridgesii* “Twinkey.”
- *T. bridgesii* “Tinnie.”
- *T. macrogonus* beast series (inc. “Halcyon beast,” “Cousin beast” and “FPP”).
- *T. pachanoi* booyah series.
- *T. peruvianus* Paul series (inc. “Halcyon delicious,” “Booyeah” “Saint Paul”).
- *T. sp.* Paul series x beasts series.
- *T. sp.* tall blue spikey series.
- *T. taquimbalensis* series.
- *T. terscheckii* series.

Urban Tribes Needle Park Nursery

The Urban Tribes Garden creator Mark Camo began propagating San Pedro in 1991, following a visit to South America and time in a small village located a two days’ walk from Tacna. A shaman from this village gifted the Urban Tribes founder three of their favourite San Pedro clones, which have been propagated ever since. The village shaman also shared San Pedro seeds from their favourite plants.

- *T. bridgesii* Urban Tribes series “UT1” – “UT108.”
- *T. pachanoi* Urban Tribes series “UT1” – “UT38.” *T. pachanoi* “UT1” and *T. pachanoi* “UT2” are the shaman’s original clones.
- *T. peruvianus* Urban Tribes series “UT1” – “UT9.” *T. peruvianus* “UT1” AKA “Peruyote” is the shaman’s original clone.

Shaman Australis Botanicals

Shaman Australis Botanicals was established in 1998 by Torsten Wiedemann to distribute rare ethnobotanical plants. Cacti were part of this collection from the beginning. While many clones were named by Torsten, he has also become guardian and source of many more clones from collectors who have since stopped sharing. Torsten also runs The Corroboree forums, where many clones were initially traded and named, many named after SAB forum members.

- *T. bridgesii* “33.” Koehres seed, beautiful glaucous colour and disease resistant.
- *T. bridgesii* “Con.”
- *T. bridgesii* “Cornucopia I.” Sourced from the defunct Cornucopia Nursery in Mullumbimby. Glaucous coloured body with pronounced notches along the ribs between honey coloured, brown tipped spines. Spines in groups of 3 with a longer bottom spine.
- *T. bridgesii* “Cornucopia II.” Sourced from the defunct Cornucopia Nursery in Mullumbimby. Semi-monstrose.
- *T. bridgesii* “GaryZ.”
- *T. bridgesii* “Hans.” Sourced from BlackDragon in South Australia.
- *T. bridgesii* “JAC007.” Sourced by Jactus from Dawson’s. Shifting ribs.
- *T. bridgesii* “Jess.”
- *T. bridgesii* “Kai.” Originally sourced from the defunct Magical Botanicals. Rib shifting, glaucous to green body and long brown spines turning white with age.
- *T. bridgesii* “Mum & Dad.” Sourced by BlackDragon from South Australia from his parents’ garden. Glaucous body, honey-coloured spines. Slow grower, prone to disease and rot in subtropics.
- *T. bridgesii* “Tig.” Fast growing, hardy, disease resistant. Often produces two classic *T. bridgesii* spines on its upper part, while each areole produces three to four spines. Strong v-notches, long, strong yellow spines with orange tips and few ribs.
- *T. bridgesii* “Tim.”
- *T. camarguensis* SAB KK1414 series. Seeds collected by Karel Kníže at ~2800 metres altitude in Bolivia.
- *T. cataquirensis* SAB KK918 series. Seeds collected by Karel Kníže at ~2800 metres altitude in Bolivia. Unrecognised species.
- *T. cordobensis* “Lance.”
- *T. cuzcoensis* “Gnosis.”
- *T. cuzcoensis* SAB KK340 series. Seed collected by Karel Kníže at ~3200 metres altitude in Cuzco, Huachac. White spines, swollen brown colour spine bases, golden tipped spines.
- *T. glaucus* “33.” Koehres seed, extra glaucous colouration, pronounced ribs, and black to brown spines turning grey to white with age and areoles are dark brown to grey in colour. Disease resistant.
- *T. glaucus* SAB KK336 series. Seed collected by Karel Kníže at ~1500 metres altitude in Arequipa, Peru.

- *T. knuthianus* “Mantis.” SAB forum member Mantis and Torsten both wanted the same plant at a cactus stall. Torsten conceded, and in exchange for Torsten’s generosity, Mantis gifted him the first cutting from the plant.
- *T. longispinus* SAB KK1670 series. Seed collected by Karel Kníže at ~2800 metres altitude in Cusco, Pisac, Peru. New spine growth is yellow and very spiny.
- *T. macrogonus* “Blue JAC002.” Sourced by Jactus from Dawson’s.
- *T. macrogonus* “KK2176 Full Blue.” Full blue was selected out of the SAB KK2176 series due to its extra blue body and overall superior looks.
- *T. macrogonus* SAB KK2176 series. Seed collected by Karel Kníže at ~2600 metres altitude in Ayacucho, Peru. Glaucons with deep ribs and large padded areoles and yellow spines.
- *T. pachanoi* “2.” Sourced in the late 90’s from the now defunct Magikal Botanicals Nursery, Mullumbimby.
- *T. pachanoi* “Alf.”
- *T. pachanoi* “Justin.” Sourced from former SAB Nursery Manager, Justin (the first one!). Beautiful, fast and fat.
- *T. pachanoi* “Mike.”
- *T. pachanoi* “Music Teacher.” Sourced by BlackDragon from South Australia from his music teacher’s property. Glaucons green, short dark spines, yellowish areoles. Slow growing.
- *T. pachanoi* “Omar.” Sourced by BlackDragon from South Australia. Dark green body, small spines and areoles. Girthy.
- *T. pachanoi* “Rob.” Originating from “shaman Roberto”, a Mullumbimby local who apprenticed with a Venezuelan shaman and imported their local cactus. Small spines, dark green, fat.
- *T. pachanoi* SAB KK339 series. The original KK339 series appear as archetypal Ecuadorian *T. pachanoi*, but newer plants from KK339 seed, like the SAB KK339 series, look more like plants from Tarna. Large white areoles, neat, small white spines with a prominent long honey coloured, brown tipped spine.
- *T. peruvianus* “83.” Originating from a market stall of cactus collectors, Kath and Allan, in The Pocket, a small village near Mullumbimby NSW. Glaucons body with long, golden honey-coloured spines.
- *T. peruvianus* “86.” Extremely variable colour. Fast grower, disease resistant.
- *T. peruvianus* “Brian.” Sourced from Perth, Western Australia. Striking rib formation, dominant V-notches, small honey-coloured spines protruding from its white padded areoles. Green to glaucons. Fast growing, disease resistant.
- *T. peruvianus* “Cactus Garage.” Originating from a stall called Cactus Garage at the Queen Victoria Markets, Melbourne. Green, fat, small spines turning white with age.
- *T. peruvianus* “Clayton.”
- *T. peruvianus* “David.” Originating from the defunct Arizona Cactus Nursery. Fat, blue, glaucons, girthy. Padded areoles, long golden spines will be your focal point. Fast growing, disease resistant.
- *T. peruvianus* “Giant Blue JAC001.” Sourced by Jactus from Dawson’s.
- *T. peruvianus* “JAC003.” Sourced from Dawson’s by Jactus. Glaucons, large padded areoles, short golden spines.
- *T. peruvianus* “JAC005.” Sourced by Jactus from Dawson’s.
- *T. peruvianus* “JAC006.” Sourced from Dawson’s by Jactus. Bluish green, distinct

notches, five small downward pointing yellow spines.

- *T. peruvianus* “Jactus.” Sourced from SAB forum member Jactus.
- *T. peruvianus* “Len.” Originating from the defunct Arizona Cactus Nursery, Sydney. Frosty blue to grey, padded areoles and golden brown, black tipped spines.
- *T. peruvianus* “Red Spine #1.” Originating from SAB forum member _e_. Short, red spines, padded white areoles and a vibrant green body. Redder spines than “Red Spine 2.”
- *T. peruvianus* “Red Spine #2.” Originating from SAB forum member _e_. Short, red spines, padded white areoles and a vibrant green body. More honey brown spines than “Red Spine 1.”
- *T. peruvianus* “Steve.”
- *T. peruvianus* “Trent.” Originating from the defunct Arizona Cactus Nursery, Sydney. Frosty, blue to grey, fat, disease resistant. Large, padded areoles and golden-brown tipped spines.
- *T. peruvianus* SAB KK1688 series. Seed collected by Karel Kníže at ~2200 metres altitude in Ancash, San Marcos, Peru. Glauous skin, pronounced rib edges, brown to yellow tipped spines, grey-white wool padded areoles and dominant V-notches.
- *T. peruvianus* SAB KK2152 series. Seed collected by Karel Kníže at ~2800 metres altitude in Huaraz, Ancash, Northwestern Peru. Green bodies, honey coloured, long double spines.
- *T. peruvianus* SAB KK242 series. Seed collected by Karel Kníže at ~2000 metres altitude in Matucana Peru. Honey coloured spines, large rib count.
- *T. peruvianus* SAB KK338 series. Seed collected by Karel Kníže at ~3000 metres altitude in Yanyos, Huancayo, West Central Peru. *T. cuzcoensis* and *T. peruvianus* traits.
- *T. peruvianus* ssp. *puquiensis* SAB KK1689 series. Seed collected by Karel Kníže at ~2800 metres altitude in Puquio, Peru. Appears more like *T. cuzcoensis* than *T. puquiensis*.
- *T. peruvianus* v. *tarmensis* SAB KK2148 series. Seed collected by Karel Kníže in Tarma, Junin, west central Peru. Frosty glauous blue to green. Large, padded areoles, protruding long top spine, honey-coloured spines.
- *T. scopulicola* “A.”
- *T. scopulicola* “B.”
- *T. scopulicola* “Cory.”
- *T. sp.* “Alizarin.” *T. huasca* x *T. purpureominata* “Peppermint Dreams.” Crimson flower.
- *T. sp.* “BlackDragon’s Big Blue.”
- *T. sp.* “Clementine.”
- *T. sp.* “Mad Max.”
- *T. sp.* “Prussian Sky.”
- *T. sp.* “Reg.”
- *T. sp.* “SAB002.”
- *T. sp.* “Tyrian.” *T. huasca* x *T. purpureominata* “Peppermint Dreams.” Magenta flower.
- *T. sp.* “Wedgie.” *T. peruvianus* “JAC006” x *T. pachanoi* “2.”
- *T. sp.* “Will’s Mixed Hybrid.” Originating from SAB forum member Gomaos. Suspected *T. pachanoi* and *T. scopulicola* hybrid.
- *T. tunariensis* SAB KK991 series.
- *T. uyupampensis* SAB KK341 series.

Herbalistics

Herbalistics was founded in Billinudgel NSW in 2003 by Darren and Sybille, later relocating to QLD. Having grown 10's of thousands of *Trichocereus* from seed, Darren selected some of the interesting ones and gave them the HB numbers below.

- *T. sp.* "HB01." Found in a garden in Gatton, Queensland.
- *T. sp.* "HB02"
- *T. sp.* "HB03"
- *T. sp.* "HB04"
- *T. sp.* "HB05"
- *T. sp.* "HB06"
- *T. sp.* "HB07"
- *T. sp.* "HB08"
- *T. peruvianus* "Matucana Sausage." Originally grown by a friend in the Northern Territory.

Trichaustralis

A little like a cordyceps fungus taking control of an ant for the continuation of that species, *Trichocereus* took over Gus Freeman around 12 years ago. Gus now grows, cares for, propagates, and spreads their seeds with glee and a feeling of purpose, if not complete control. The goal of Gus' garden is to appreciate these plant's beauty and watch them grow and change, as well as create new plants for other people that are exciting and hopefully different to the norm.

When creating seeds, Gus tries to focus on making hybrids that have a high likelihood to eventuate in interesting plants, especially reliably monstrose and crested, coloured flower hybrids mixed with taller plants, and fatties mixed with others to create new and interesting phenotypes. Gus has a strong desire to create tall, 'san pedro' looking plants that also have a coloured flower. This is a long-term goal that is currently a work in progress. To truly achieve this will require generations of breeding. This will hopefully result in some of Gus' named clones being spread to many other gardens as feature plants in the future.

- *T. sp.* "Tunjo." *T. puquiensis* X *T. pachanoi*. Variegated clone, very short spines.
- *T. sp.* "Trojan Llama." *T. sp.* "TPM" x *T. pachanoi*. Seed grown plant from Sacred Succulents seed. Produces mutant offspring as a seed parent.
- *T. sp.* "Johnny 5." *T. pachanoi* "TPQC" x *T. sp.* "TPM." Grows crested and reverts, hybridised and seeds distributed.
- *T. sp.* "NitroJack." *T. bridgesii* "Lumberjack" x *T. sp.* "TPM." Grown from Nitrogen's 2015 seeds. Very crested, never reverts (so far).
- *T. sp.* "NitroZensis." *T. sp.* "TPM" x *T. huarazensis*. Grown from Nitrogen's 2015 seeds. Very short spined, melts and rib shifts fairly reliably.
- *T. scopulicola* "Zed's." A seed grown scop obtained as a small seedling. Very fat, very spineless.
- *T. sp.* "ValiGus." Seed grown from 2015 *T. validus* open pollinated seeds. Seeds collected from Micromegas' Secret Garden. Very fat, looks to have a scoppish father.
- *T. sp.* "Zelly 240." *T. scopulicola* x *T. grandiflorus* "VRG ." First release by Misplant/ Zelly. hybridised and seeds distributed.
- *T. sp.* "Zelly 260." *T. scopulicola* x *T. grandiflorus* "VRG ." First release by Misplant/

Zelly, hybridised and seeds distributed.

- *T. sp.* “Zelly 280.” *T. scopulicola* x *T. grandiflorus* “VRG .” First release by Misplant/Zelly, hybridised and seeds distributed.
- *T. sp.* “VP1.” *T. scopulicola* x *T. grandiflorus* “VRG .” First release by Misplant/Zelly. Hybridised and seeds distributed (VP stands for Veg Patch).
- *T. sp.* “VP2.” *T. scopulicola* x *T. grandiflorus* “VRG .” First release by Misplant/Zelly. Hybridised and seeds distributed.
- *T. sp.* “VP3.” *T. scopulicola* x *T. grandiflorus* “VRG .” First release by Misplant/Zelly. Hybridised and seeds distributed.
- *T. pachanoi* “Hahn.” Clone originally obtained near Hahndorf in a very old garden. Mother plant was destroyed by the owner shortly after.

Micromegas’ Secret Garden

Micromegas’ garden started with a single *T. pachanoi* “PC” plant in a bathtub, but after realising the importance of plants to life in general and several trips to the Americas to get to know Cactaceae up close and personal, has expanded to cover five-to-ten acres of mixed planting and an ever-expanding *Trichocereus* tribe.

- *T. sp.* “West 01”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp.* “West 02”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp.* “West 03”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp.* “West 04 Chonk”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp.* “West 04 Shady”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp.* “Rectangular Plaza 01”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp.* “Rectangular Plaza 03”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp.* “UNK01”. Seed collected in Peru in 2011, grown by Micromegas.
- *T. sp. T. scopulicola* x *T. bridgesii*. Seed grown by Moon Unit Botanica.
- *T. sp.* “Ripple”. Seed grown by Luke Tippins or Quentin Oliver.
- *T. sp. T. sp.* “Flying saucer” x *T. schickendatzii*. Grown by Makka Pakka, flowered by Micromegas.
- *T. sp.* “Spruce goose”. *T. peruvianus* “Sausage” x *T. bridgesii* “Bruce”, seed grown by Micromegas.
- *T. sp. T. arboricola* x *T. grandiflorus* “VRG”. Grown by herbalistics, flowered by Micromegas.
- *T. sp.* “Ranga”. *T. pachanoi* “PC” x *T. bridgesii* “Bruce”. Seed grown by Micromegas.
- *T. sp. T. grandiflorus* w/red x *T. grandiflorus* w/yellow flower. Grown by Makka Pakka, flowered by Micromegas.
- *T. bridgesii* “Original bridgesii.” Micromegas’ first *T. bridgesii*, purchased from a closing down nursery 2007.
- *T. glauca*. Purchased from the SAB nursery as a 3-inch seedling in 2008.
- *T. peruvianus* “Andy Amine.” Seed maybe grown by SAB nursery, raised by Micromegas.
- *T. peruvianus* “Alchemica.” Either grown by seed by Alchemica or from a seedling by PD.
- *T. poco* “SG”. Purchased from the SAB nursery as a 2-inch seedling 2008.
- *T. terscheckii* “JL”. Seed grown in Adelaide by unknown grower.

Fahim Adabjou

Fahim Adabjou is a prolific sharer of cacti culture and a regular host of much loved ‘grafternoon’ parties. Fahim is a master grafter with a particular taste for *T. terscheckii* and habitat clones.

- *T. sp.* “Fahim01”. *T. pachanoi* “Lima Flower Market” x Open pollinated. Seed from Javier.
- *T. sp.* “Fahim02”. *T. validus* “Fields shed” x *T. terscheckii* “Banana.”
- *T. sp.* “Fahim03”. Seed from an open pollinated *T. macrogonus*.
- *T. sp.* “Fahim04”. *T. peruvianus* “Huarimayo” x Open pollinated.
- *T. sp.* “Fahim05”. *T. pachanoi* “Kunaq” x Open pollinated. Seed from Chavin herbalists.

Will’s Garden

Will M started collecting cactus 14 years ago when he was gifted a *T. pachanoi* “PC” and a *T. bridgesii* “Bruce” cutting at a meet up for the Corroboree forum. The cactus bug bit hard, and Will spent his free hours learning about the many different San Pedro clones available in Australia, attempting to catch them all. Over the years, his obsession changed and grew from getting every *T. bridgesii* available, to getting some international clones, to producing coloured flower crosses.

- *T. knuthianus* “Bluth.”
- *T. bridgesii* “WM01.”
- *T. bridgesii* “WM02.”
- *T. bridgesii* “WM03.”
- *T. bridgesii* “Pigsy.”
- *T. bridgesii* “Beatrice.”
- *T. sp.* “Alchemica Too.”

Mark Hoffman

Mark Hoffman started growing *Trichocereus* in 2012. Mark’s collection focuses on sacred cactus with a history of ethnobotanical use.

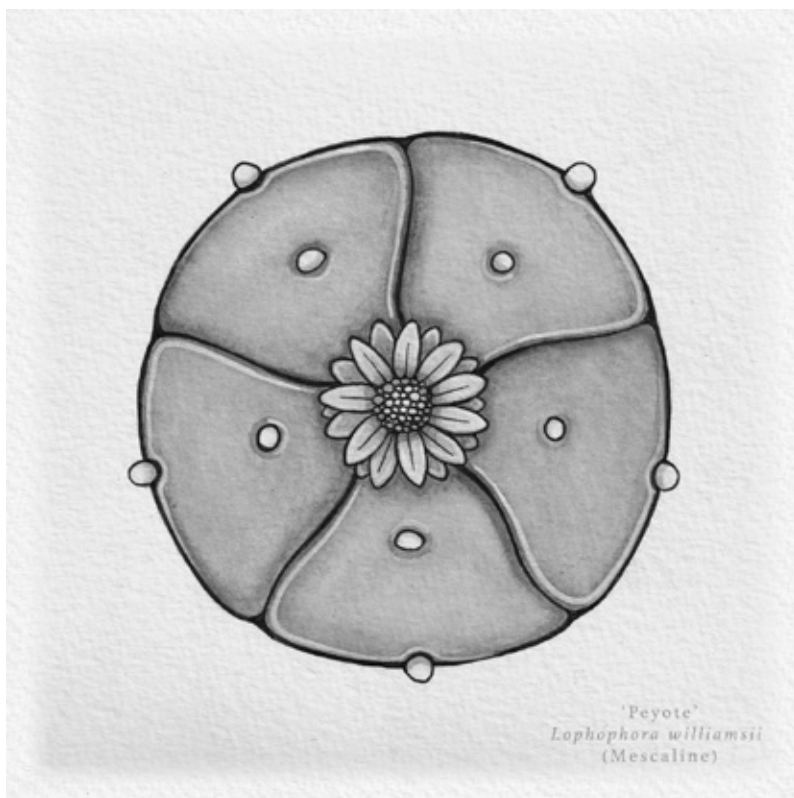
- *T. pachanoi* “MH01.”
- *T. pachanoi* “MH02.”
- *T. pachanoi* “MH03.”
- *T. pachanoi* “MH04.”
- *T. pachanoi* “MH05.”
- *T. pachanoi* “MH06.”
- *T. pachanoi* “MH07.”
- *T. pachanoi* “Ecuadorian 1.”
- *T. pachanoi* “Ecuadorian 2.”
- *T. pachanoi* “Bluetooth.”
- *T. pachanoi* “Glaukus.”
- *T. pachanoi* “Pharoah.”
- *T. pachanoi* “Scwartz.”
- *T. pachanoi* “Skywarrior.”
- *T. peruvianus* “Dankwad.”

- *T. peruvianus* “Shortspine.”
- *T. sp.* “Lumpy Jacques.”
- *T. sp.* “Cromag brain crest.”
- *T. sp.* “Third Brother.”
- *T. sp.* Unlabelled. *T. pachanoi* “Yowie” x *T. macrogonus*.
- *T. sp.* Unlabelled. *T. pachanoi* “Yowie” x *T. peruvianus* from Icaros DNA seed.
- *T. sp.* Unlabelled. *T. peruvianus* from Icaros DNA seed x *T. bridgesii*.

The Mescaline Garden

The Mescaline Garden is my own collection. I first started growing these San Pedro ~2009, with in-ground plantings ~2018. I grow many psychoactive plants, but cacti seem to agree with me. I have presently only named and distributed two of these plants:

- *T. sp.* “Neptune.” A hybrid producing deformities, variegation, and unique branching growths making some columns look like tridents. Nitrogen seed germinated by Jordan Calleia, propagation of variegated form en masse by Fahim Adabajou.
- *T. sp.* “Emily Avenue.” A uniquely shaped San Pedro of lost parentage with blue skin, red spines, and a tendency to creep.



A Prescription of NeuroGnostics; Entheogenic Herbalism

By Rachel Gagen

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Hallucinogens, Plant Medicines, Empathogens, Entheogens, Psychedelics. There are many words for these substances. Most accurately, they might be described as neurognostics or neurophenomenologics, meaning a substance that affects a neural system and alters the nature of consciousness or the experience of being conscious. Which is us. We are an experience of consciousness, and these substances alter the way we process data from our environment and, ultimately, the way we generate data ourselves. This alters the stage within which we are embedded, creating cascades of change through our perceptions of reality. Humanity, and its myriad expressions of culture, finds itself drawn towards these plants - as it has done for generations upon generations. Not just because we have a deep yearning and need for trance states, ecstasy, and ritual, but because we are a part of nature and the very activation of our inner world, our receptor sites, and endogenous chemistry are reliant on interacting with nature.

We are going to explore psychotropic herbalism, that is, organic biological organisms (aka plants, fungi, bacteria, and animals - living beings) that are both used as medicine and have an affinity for the mind. In particular, we will focus on herbs that have an affinity for the parts of the mind that govern our interpretation of information from the external world and, in response, adapt our inner world. To understand the force that governs our interpretation of the external world is to speak to the symbolic bridge, divide, or wall, separating the Self from the non-Self - internal from external. If the flow of information from one side of this divide to the other can be altered, and that this might adapt our understanding of our inner world, then this brings to question the very nature of the gatekeeper, standing between the worlds of inner and outer. This terrain is laced with big philosophical questions concerning the confines and limits of our sense of individuality, the influence of the collective, and the nature of relationship. This might sound vast and overwhelming, but this is the exact territory that neurognostics rule; the bridges between formally defined separations. Conscious and subconscious. Self and non-self. Inner and outer. For this reason, the deeper we delve into the world of entheogens, the more appropriate it becomes to move from critical language, into analogy, symbology, and even poetry. So, I invite you to soften your analytical mind and journey with me into the world of entheogens. A world of alive plants with living intelligence that, when ingested and consulted with, induce an experience of Godliness in the human body where words struggle to describe the true depth of meaning.

“It seemed that 100 years would not be sufficient to describe the fullness of a single minute.” ~ Rudolf Gelpke on *Psilocybin*

We are exploring medicines that regulate the ego, open our sensory gating channels, widen and refine our perception of the mind and the Mind at large. This is a field that ancient herbalism worked with actively for many of our Indigenous kin and ancestors. These

herbs were consulted in times of sickness, in ceremony, in times of change, and in times of celebration. This is a field of herbalism that has been suppressed in modern culture. Without a safe and healthy container to explore this aspect of ourselves, how has this impacted our health? We are still learning the true impact this has had on the prevention of our development intellectually, relationally, emotionally, and spiritually. What we are seeing rising to the surface now is medically backed and tracked entheogenic use for chronic health conditions at a time when our world is facing a mental health crisis like never before.

At the core of our global health crisis is a sense of self that is directly experiencing what health or lack of health is. Let's explore the field of entheogenic herbalism and how it allows us to interact with the very understanding of who we are and our place within society. There are many definitions of the word ego; it can mean the complete self, and it can also mean a self-image. It tends to be a type of crucial central reference point of the individual that other relationships orient around. It is influenced by experiences of our own making and the reflections of those around us, including cultural norms. It thrives on feedback mechanisms from the social relationships around us, whether positive or negative. And it is susceptible to being closely mixed up and even muddied by personas. Personas are constructed or projected selves. The term persona originates from personare, which means to amplify sound (sonar) through a mask. It is a false self; a mask worn by an actor, as opposed to the deeper self; the wearer of the mask.

Entheogens are essentially a class of herbs which generate a direct experience of connectivity to the vital force of life, which is innately connected to an intelligence that exists behind or beyond the mask, a type of meta-consciousness that speaks through our masks. Part of how entheogenic herbs work on these deeper aspects of our perceptions is through widening sensory gating channels. All of the senses in the body; our sight, our hearing, our touch, our taste, our smell, are being experienced through sensory channels that have barriers controlling the amount of information being received by the brain from these senses at any time. It is right here that the inner and the outer worlds collide, squeezing the great expanse of the external environment through a road watched over by a gatekeeper, deciding who may enter the inner kingdom. These channels can be closed and opened through chemical activation and even focused conscious awareness. Stephen Buhner explains how serotonergic herbs activate and interact with the body & mind, affecting these channels. "Activation of the 5-HT_{2a} receptors by LSD, psilocybin, and the other serotonergic hallucinogens leads to immediate alterations in the hippocampal processing of sensory data, learning, and memory, including its depth work with the meaning fields in which the perceiver is embedded" (Stephen Harrod Buhner ~ Plant Intelligence & The Imaginal Realm).

Entheogens widen the kinaesthetic touching of the outer world on the inner world through reallocating meaning over the importance of the information being received by the senses. We can also do this through mindfulness, repetition, and time. For this reason, a healthy dose of entheogens might theoretically be prescribed to widen one's perspectives when problem solving, to access non linear ways of thinking, to delve deeper into the sense of sound to orchestrate musical pieces, and so many other moments when emphasising the environment around us might broaden our narrow mindedness. When our outer world is experienced as deeper, brighter, more colourful, and more meaningful, we ourselves change. We have an opportunity to redefine which parts of ourselves we consider important and therefore

contribute our energy to the environment we are in, our work, our family, and our community in a new and more passionate way, backed by meaning and depth.

“For art to exist, for any sort of aesthetic activity to exist, a certain physiological precondition is indispensable: intoxication.”

~ Friedrich Nietzsche

I've heard it said that when a sickness is untouchable, like a cancer, it needs to be treated with the intangible. We need to step into the spaces of the unknown to work with the places we don't understand about ourselves. Why is it that psilocybin allows us to make peace with death when all other available medicines fail? Why is it that terminally ill cancer patients are improving the quality of their lives and outliving their death dates with mushrooms and cannabis? When a sickness is untouchable, we consult the intangible.

When it comes to herbal medicine, if we look to our ancient and preserved traditional medicine systems in China, India, and Indigenous cultures, there are distinct similarities in the language used and, therefore, the ideas understood about the energetic architecture of life. These terms make up the foundation of these traditional medicine systems and their use of herbs as agents of change. They are concepts based on the elements of nature. By observing nature, our ancestors came to understand how to use medicine and how to treat sickness. We mirrored ourselves and our health off the rhythms and cycles of nature and its elements. What I mean by elements are the very foundational forces at the core of the manifestation of life itself. We see these elements emanate throughout all life - heat, cold, expansion, contraction, movement, stillness. They are the seasons, they are the climates, they are the times of day, the phases of life. Traditional medicine systems were all inspired by the observations of these forces. Medicine practices that are born from the land, mimic nature and are inspired by the interplay of the elements within our bodies and minds. We see the same patterns of elements expressed not only throughout traditional medicine but even our Western allopathic medicine has roots in the Greek humours and the movements of liquid in the body. The elements in traditional medicine systems worldwide tend to be categorised as variations of Earth, Air, Water, and Fire. But we also see there is another, the fifth element, squeezed out of the Western mind; that of Ether, the quintessence. This is said to be the space that contains the material, the metaphysical background upon which life is asserting expression - the canvas, the container, and spiritual mycelium. This is the element that all entheogens are working with; Ether. And this is an important point, as I believe it is part of the story of why the psychedelic experience continues to hold meaning for people and can play an important role in maintaining a healthy perspective. Ether is the container itself, the macrocosm, the mindset through which we see life. It is somewhat intangible and very non physical, making it hard to see, tricky to speak to, and easy to omit meaning to. When a sickness is untouchable, we must consult the intangible.

It's also worth mentioning that psychedelics were an active part of religious practice and agents of the mystical experience. Most entheogens have an origin story of cultural use interwoven with religiosity. As we move into modernity however, we appear to be generally leaving behind our attachment to the influence religions once held over us. Perhaps religions allowed the miraculous and indescribable to have a place at the table of conversation. In its presence, mankind could be humbled into accepting the unknown as a part of the great

mystery. I believe that this is part of the reason why entheogens are rising in popularity within our modern culture, and begging for a mechanism to be created for their legal and accepted use. We need Ether to exist within our lives, just as it exists within life itself. As the entire globe becomes Google mapped, the idea that there are any uncharted territories left is a belief slowly dissipating. Our children are being born into a presumption that all is known or capable of being known. If life is an equation to be solved it means that we believe life is solvable, equatable, and surmisable. And whilst this may or may not be true, it is a belief that is often assumed in an increasing materialistic world. And within this framework, the mystical experience serves an even greater need, accessible within the entheogenic apothecary.

Where once God was a living force that permeated through our entire way of life, many now understand it as more of a concept of myth and meaning, than as a direct experience of divine revelation. But what for humanity's undeniable yearning for the curious and the unknown?

Entheogens can allow for a deep embodiment of the mystical experience, which appears to allow for the element of Ether to house within us once more, as our ancestors once experienced the mystical in rites of passage, religious rituals, periods of fasting, and formalised and accepted psychedelic use. But this time round, we are consulting the entheogens less captive of religious constraints, setting sail to discover the true potential of ourselves amidst a backdrop of wonder.

“Butterflies don't write books, neither do lilies or violets. Which doesn't mean they don't know, in their own way, what they are. That they don't know they are alive—that they don't feel, that action upon which all consciousness sits, lightly or heavily. Humility is the prize of the leaf-world. Vainglory is the bane of us, the humans.” ~ Mary Oliver - *Upstream: Selected Essays*



Thinking Fungally: Ecological Modes of Thought

By Andrew Goodman

In recent years there has been much popular and scientific excitement over the ‘discovery’ that forests (and indeed grasslands and other ecologies) communicate and cooperate in ways that might be termed an ecological mode of thinking or consciousness. The role of fungal organisms in these so-called ‘networks’ has rightly been central to these discussions, and the challenge that fungal-becomings offer to biology and indeed, the whole Western hierarchical ontology, is profound. Thus, it has been somewhat disappointing (if not surprising) to see that these discoveries have often been quickly contained within normative paradigms, as I think there is much more that might be learnt from mycelia, leading us to a *neurocosmopolitics* that might value different modes of thinking without reference to a so-called ‘norm’ (Walker 2021).

Like the infamous Turing Test, which asks that a machine pass for a human, (and therefore whose first failure as a test is the assumption that any machine intelligence could only and should only reflect so-called human thought), much of the discourse around plant and fungal intelligence takes as its benchmark a very narrow conception of possible modes of thinking. Instead of expanding these modes – for example, the challenge to individualised intelligence or consciousness that the mycelia and the forest as a whole present – the unfortunate trend has been to try to shoehorn these burgeoning investigations into a reflection of the human, establishing not only anthropomorphic and neuronormative narratives of family and communication, but also ascribing gender-normative (trees as mothers) (Simard 2017) and colonial readings onto these findings in their insistence on the subjectification and *ownership* of thought. There is, I would suggest, another much more radical path that might be taken in these investigations, one that leads us to a wilder place; one that challenges not only notions of human superiority but also of the individual as the prime operator of thought. In other words, there is an ecological mode of thought right in front of us, obscured only by our own limited modes of thought and discourse.

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1. I have put ‘discovery’ in inverted commas as I think this supposedly new information would come as no surprise to many Indigenous cultures, for whom a much broader understanding of what it is to live immersed in a lively, multispecies world is central.
 2. The Turing Test assesses AI on its ability to make decisions that are indistinguishable to a human from human decision making (Bratton, 2015).
 3. On reconceiving the wild outside of its negative colonial context, see Halberstam, and Nyong’o (2018).
 4. Many of the rewilding narratives propagate this confusion, championing wolves, bears, large cats and so on rather than promoting overall ecological liveliness. See, for example, Monbiot (2014). It is important, of course, not to continue this problem by exulting mycelia above other ecological components.
 5. On the importance of thinking ‘difference without separability’ to overcome the colonial mindset, see Ferreira da Silva (2016).

A broadening of the concept of intelligence is an urgent environmental *and* political one for many reasons: one of value and justice. Firstly, if we are to learn to think truly ecologically, we need to stop exceptionalising some animals and environments as special cases to be preserved at the expense of their less glamorous but equally ecologically important co-inhabitants – all the snails, mosses, worms, and bacteria that can't compete with mega-fauna trophy species for attention. We cannot continue to discover exceptional species with whom we can identify (or rather, can distort their narratives to mirror ours), but must begin to embrace their difference and their inseparableness from their ecologies. Secondly, any discourse that attempts to find other species with human-equivalent (and/or exploitable) intelligences repeats the anthropocentrism that has got us into the cultural/environmental/psychological crisis that we continue to face in the epoch that is often referred to as the Anthropocene. Thirdly, current western concepts of thought already deny intelligence to many (perhaps even most) humans alongside other animals: children, older people, the Neurodiverse and Crip communities, Black and People of Colour, and First Nations members; and until very recently, women in general and queer-identifying bodies, have regularly been denied the potential for rhetoric (Yergeau 2018; Moten 2018). The pathologising of non-neurotypical modes of thought is an urgent issue for all those human, non-human and more-than-human bodies whose experiences of the world are devalued, ignored, or silenced.

The second failure of the Turing Test (on which so much discourse around AI and intelligence, in general, is wrongly based) is that it positions consciousness as the already-thought: which needs only to be demonstrated, mapped onto, or correlated with existing knowledge to prove intelligence, thus mistaking representation for worldly engagement, and engaging in further settler-colonial behaviour that refuses volition to all but the human, and seeks to wrangle the liveliness of the world in its own image. This peculiar and particular Western notion of that intelligence (confined to an imagined neurotypicality) insists on ownership and limitation, persisting with outmoded ideas of conscious activity being bounded by the physical limits of the brain – in effect, still clinging to the notion of a homunculus who drives (oversees) the slave-like body.

But we can start elsewhere, even within traditions of Western thought. With, for example, William James, who insists that thought is an event in the world rather than a mere expression of the chemistry of the brain (2010; Nöe 2009), and with Henri Bergson's creative evolution that sees thought as building rather than representing worlds (1998). Though it took some time to catch up to these early modernist philosophies, there is contemporary neuroscience to back up these concepts, disputing the idea that thought can be represented transparently in the MRI mapping of neuron activity, which perhaps proves to be far too blunt an instrument to consider either the bigger (bodily/ecological) or the smaller (quantum) registers where more interesting data might be found (Nunez 2010 & 2016; Nöe 2009; Romijn 2002; Ho 1993; Arnold 2019). Thought conceived as event (sub-atomic, chemical, electrical, affective, *relational*) has its own volition or power in the world. It has no need to be *owned*, and in fact can never be fully contained in individual bodies, but spills over as excess and incompleteness. It is conceivable

6. Though Anthropocene is a highly problematic term – Capitalocene or Plantationocene better reflects the fact that the epoch and the damage it has wrought is centred not on the human in general, but on a very small number of highly privileged, largely white, western humans who benefit at the expense of the rest of the world, including other humans (Haraway and Tsing 2019).

only as immanent relation that moves beyond the quantifiable (in both our own experience and the unknowable experience of another) as an ‘opaqueness’ whose complexity of entanglement means that it cannot be comprehended from any one perspective (Glissant 2010; Moten and Harney 2021).

The fungal world can be part of this expansion of modes of thought beyond humanism. In fungi we find a lively, creative engagement with worlds, one that is neither restricted to ‘problem solving’ (as a reductive definition of intelligence), nor in any way comparable to humanist modes of thought. With their inseparability (their repetition of cell structures, their lack of organs to hierarchise), their thought cannot be definitively located. Their connectedness moves beyond the quantifiable, despite attempts to iron out the complexity of entangled relations with the worlds they help to make. The fungal is never alone (though of course neither are we – discuss body ownership with your gut biota sometime!). They do not engage in fortress building but are inherently sympoietic and symbiogenetic, with lively appetites for making kin with the forest and the meadows. Mycelia seek pragmatic but rich solutions for such world building with whatever is at hand, but are not reducible to being the servants of the trees, passing on messages, nor are they trading nutrients like a stock exchange (Simard 2017). If their intelligences are not comprehensible when reduced to problem solving (an oft-used but decidedly limited notion of intelligence), then they might be more expansively conceived of as *joy* (in the Spinozan sense of capacities to affect and be affected): joy of connectedness and liveliness that reaches beyond the already-made and into potentiality.

Mycelia – underfoot, under-seen, and ever underestimated – are middling collectives rather than heroic trophic creatures. And, like many whose activities are undervalued, they make sense in and through relation, through collectivising, organising, sitting in between. They *think-with* rather than for themselves, grow around, through, and between, become other. Their intelligence is in their activity – in how they make a difference – not their material substrate or transcendental souls. Here consciousness is an appetite or practice, not a birth right (to be bestowed or denied). Inseparable from their ecologies, they make sense hand-in-hand with others (mycelia with root with rock with soil), and are insensible when separated.

If we are to have a role in contributing to building neurocosmopolitan worlds that actively and creatively engage with difference for the enrichment of all (Walker 2021) then listening carefully to such intelligences – thinking with them as we learn from them how to be otherwise, gently, in this world – suggests a way forward (or perhaps sideways, since ‘progress’ should be treated as a suspiciously human-centric approach). Thinking fungally, in this sense, is neither to think for the fungal (to place oneself in the position of the mushroom as if we might colonise mycelial thought, nor is it to think about the fungal (to create a representational model), but to embrace the softness of a becoming-fungal which places the processes of consciousness as event-in-the-world as primary, rather than a thinker (human or ‘shroomy), at the centre as if this was a given. To free thinking from not only humanist analogy (anthropocentrism), but also from its legacy as a tool of exclusion and devaluation, we might learn from mycelia that consciousness is an irreducibly collective and expansive process, an adventure into the unknown, a gift to ecologies. The individuation of thought and of living ecologically in the widest sense of the word (of coming into being) might be what matters here, in all its trans- and more-than-human permutations.

Here thought is not owned, but surpasses us and goes forth into the world as a creative, connective, and transgressive force, as the mycelia our teachers always do.

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The problem at the heart of modern psychedelic clinical research

Rich Haridy

Note: This article was originally published on the science and technology news site New Atlas.

How much of a problem is it if participants in psychedelic clinical trials can easily tell they have been given a placebo? New Zealand researcher Suresh Muthukumaraswamy suggests it is a big problem and many findings from recent psychedelic trials may be over-estimated.

For around half a century the randomized controlled trial (RCT) has been considered the gold standard in evaluating the effectiveness of any new medical intervention. The process involves recruiting a group of participants with a certain condition and randomly separating them into at least two groups.

One group receives the experimental intervention while the other group, known as the control, receives a placebo. To eliminate any bias the RCT would ideally also be blinded, meaning not only are the participants unaware what group they are in but neither do the caregivers or the researchers assessing the trial. All of this ultimately should lead to a robust trial that delivers clear empirical evidence as to whether a novel treatment fundamentally works.

One of the key reasons for blinding a RCT is to minimize the influence of the placebo effect, that phenomenon whereby inactive drugs result in positive therapeutic outcomes. While the impact of the placebo effect can vary depending on the condition, it has been consistently shown that patient outcomes can be significantly influenced when they are primed with a certain expectancy. If 10 people suffering from a mild headache were given a sugar pill and told it was a cutting-edge new drug it could be expected at least one or two would have a positive response.

Placebo effects can be positive or negative. Often excessive warnings about a drug's side effects can generate negative placebo responses. This so-called nocebo effect can be seen in clinical trials where subjects in the placebo group still report side effects from an inactive drug.

For the most part, our modern RCT framework is a robust way to determine whether new drugs actually work, but what happens when you can't effectively blind your trial? What happens when it is obvious to both participants and assessors whether someone has been given a placebo or not?

This is the problem at the center of the promising emerging field of modern psychedelic science. And according to Suresh Muthukumaraswamy, a psychopharmacologist from the University of Auckland, this is such a major issue that most modern psychedelic clinical trials are probably reporting over-estimated effect sizes.

Suresh recently co-authored a comprehensive article on the subject with colleagues Anna Forsythe and Thomas Lumley. While recognizing the promising research findings from psychedelic studies over the past 10 to 20 years the article presents a case for why many modern psychedelic clinical trials are flawed and suggests what can be done to deliver more rigorous results. Speaking to New Atlas about his latest article, Suresh, who is also running one of the world's first placebo-controlled LSD microdosing trials, is skeptical there is enough good evidence to show any of these current psychedelic medicines are ready for full public approval.

“On the basis of the evidence that’s been collected, at this point, I don’t see any reason why you would think that these drugs and interventions are approvable with the current issues they have in terms of design,” Suresh says.

The psychotherapy problem

The blinding and expectancy problem in many psychedelic trials goes deeper than participants being able to simply tell they have been administered the placebo, according to Suresh. Many modern psychedelic drug trials involve comprehensive accompanying psychotherapy protocols. These interventions are not simply claiming a single psilocybin dose will cure a person’s depression, but instead they often incorporate two or three day-long active drug sessions into a larger multi-month psychotherapy framework.

Therapy sessions both precede and follow the drug sessions in order to help a patient effectively integrate the psychedelic experience into a positive therapeutic outcome. And the entire treatment protocol can span anywhere from 6 to 12 weeks.

Knowing one is part of a placebo group is more than just a momentary disappointment in this context. It often means both therapist and patient still have to engage in the entire treatment protocol with full awareness they are not part of the active drug cohort.

“So you imagine someone getting a therapist who’s potentially slightly motivated to treat this patient,” explains Suresh. “And so they’re sitting in a psychedelic therapy session with the patient. They don’t know what they’ve been given, but the patient quickly realizes that they’ve been given placebo, and the therapist is sitting there going like, this person’s been given a placebo. So is that therapist going to deliver as good a psychiatric intervention for the patient? Because one of the things we know about psychotherapy is that the build up of that relationship between the patient and the therapist is one of the strongest predictors of good outcome that we can have.”

Add to this the popular wave of media coverage heralding the revolutionary potential of psychedelic medicine and you have a perfect storm of bias and expectancy both enhancing the positive effects for those in the active group and amplifying the negative outcomes for those getting the placebo.

But how much of a problem is this really?

According to Suresh, there are hints in the literature quantifying how much this blinding problem could be influencing research findings. One of the clues comes from the growing body of research investigating the antidepressant qualities of ketamine.

Many of these ketamine trials use what is called an active placebo to try and help maintain blinding. A sedative known as midazolam is sometimes administered to the placebo group in the hopes that its mild psychoactive properties somewhat confuse subjects into thinking they have been given ketamine. Metastudies comparing the results from ketamine trials using inactive placebos to those using midazolam suggests significant differences in efficacy when a subject is clearly aware they have been given an inactive placebo.

“When they compare ketamine to a saline placebo, the effect sizes that are reported are around $D = 1.8$. That’s a massive effect size. It’s just enormous. When they use midazolam as the active placebo, that effect size drops from 1.8 to 0.7,” says Suresh. “That is an absolutely enormous drop.”

Suresh adds that midazolam is not even a strongly convincing active placebo, with many trial participants still effectively guessing which group they ultimately were randomized into. And while active placebos certainly may be a factor in helping deliver better results moving forward it could be challenging, if not impossible, to find an active placebo that is comparable to drugs such as LSD or psilocybin.

Despite these challenges Suresh does not suggest we need to abandon RCTs for psychedelic research ... at least not yet. High dose/low dose groupings could be a way around the active placebo problem, offering extra insights into treatment outcomes for different doses. But in general he calls for more rigor and transparency in the ways psychedelic trials are designed and reported.

More detailed reporting of how effective the blinding was in any given trial is one suggestion. Another is more pre-publishing of trial protocols before the trials are actually conducted. Suresh says it is shocking how few psychedelic clinical trials are clearly pre-publishing study protocols and it is a massive problem leading to unsuccessful trials being buried, or worse, being spun with positive outcomes by cherry-picking effect measures.

Alongside this he calls for more clarity into exactly how trial designs are communicated to prospective subjects. Just describing likely outcomes to trial participants has been shown to influence treatment effects. In the past these factors have not generally been acknowledged in great detail, after all, if your blinding is strong it shouldn’t really make much of a difference.

But in the world of psychedelic science things seem to play out a little differently. A compelling study published in 2020 from a team of Canadian researchers set out to try and experimentally quantify the psychedelic placebo effect by inventing a fictional psychedelic drug and staging a fake party.

Tripping on nothing

The study recruited a cohort of subjects under the pretense of testing the effect of psychedelic drugs on creativity in a natural environment. The subjects were introduced to a drug called procin, described as a fast-acting psychedelic similar to psilocybin.

The entire experience was staged to give participants the impression they were taking part in a serious psychedelic drug experiment, from amplified security procedures upon entering the research facility, to undercover research assistants wandering around the simulated party environment pretending to be other trial participants feeling the effects of the fictional drug.

The results were striking, with over 60 percent of subjects reporting feeling some kind of psychedelic effect. Only 35 percent of the cohort correctly guessed the drug was a placebo, and 50 percent of those who reported feeling a psychedelic effect actually had previous experience with psychedelic drugs.

One conclusion from the study was a call for psychedelic researchers to better describe the experimental conditions of any given trial. If the behavior of those overseeing psychedelic experiments can influence outcomes to such a significant degree then we certainly need more transparency in detailing these factors. It may be unconventional to describe these factors in a study reporting data from a RCT, but there is nothing conventional about psychedelic science.

Moving forward, Suresh is frank about the problems psychedelic researchers are facing. He is quick to point out the myriad of problems in his own prior research, often citing his mistakes as examples instead of referencing others. But he says the most important takeaway is now that we know what the problems in the research are, from here on in we should start tightening up practices and improving protocols.

“It’s a new field of science,” he says. “The first wave of stuff is likely to be flawed. So the question is how can we make it better? We may not be able to achieve perfection, but we can at least try harder.”



Preparing the Vessel

Lila Lieberman

How strange it may have been for our ancestors to look down their lineage and see their children marvelling at their knowledge with a golden romanticised glow. Sacred rites, remedies, ceremonial transmissions of knowledge - things that were commonplace for them, necessary for survival on physical, cultural, and spiritual level - would have been thought absurd to be seen as a luxury, or a knowledge that could be done without. This fundamental education on the ways of the world, across all levels of our being, was so vital that their very culture was crafted as a vessel to carry it.

To realise the essence of who we truly are is the deepest call for a human being. Many civilisations curated themselves around this quest, sculpting their paradigms, architecture, and rhythms of daily life around it. The practices and devotional rites in old wisdom cultures serve to maintain and expand upon illuminations revealed. Not only is the structure of life and culture centred around this, the physical reflection of it is bred into the architecture. Temple structures hold immaculate wisdom, designed around cosmic principles that cultivate clarity, lucidity, and spiritual energy. Such is the importance of cultivating this knowing and practice that wisdom civilisations have pivoted themselves around it.

The body is considered one such temple, likely the most important one, as the organically attuned vessel through which new seeing and evolution can happen for a culture. Our physical being is understood as an instrument through which we can fine tune the quality of our consciousness. Practices of cleansing, opening, receiving, and propagating certain energies are streamed through the body for this purpose. Ways of preparing and maintaining this vessel that contains our essence hold a central focus in the spiritual direction of these cultures. The intricacies and perfections of the temple structures are a reflection of what is within us. They are a mirror to sharpen our awareness. Their design contains the same exquisite capacities of our potential, the wisdoms we are pregnant with.

This natural essence of life is running through us all the time. Like a temple with a stream running through it, our first job is simply to clean the temple, to keep the pathways open for this essence to channel well. It can then be directed, heightened, and trained for more refined practices. Our body and energy is used with the same purpose as a temple, a sacred container, for the transformation of consciousness. It is a portal to alchemise our experience into life-enriching nectar. This is the purpose of initiation rites, to ready the being to dance more deeply with essence. Much like preparing the foundations before laying a house on them, we prepare the being before embedding great knowledge within it.

The first process in initiatory rites is cleansing, emptying the vessel of its previous content, and opening the inner space. Any initiation will start with this. We know of the *dieta* practices in South American vegetalista traditions, cleansing before opening

to receive what a plant has to show us; we see this in the ancient Ayurvedic practice of panchakarma, using five modes of cleansing the body with various techniques; we see it in the grounding practices of Southern African spirit initiations, staying on ones knees for months at a time, avoiding certain foods, interactions and habits. All of these clear the way and open the path of our being into our inner space.

In uninterrupted traditions, rites of passage, rituals, and ceremonies have always been in place at crucial points of a person's growth to harness the energy ripe at that time. In the sacred geometry of a human lifespan, there are optimal moments, nodes as it were, that, when addressed and channelled appropriately, give greater energy to our being and, thereby, our community.

Psychedelic experiences have often been used as a technique of initiating the being into deeper seeing and knowing at the right times. Individuals were prepared, and this premeditated timing, both in the individual's life and in harmony with the wider environment, allowed a rich harvest.

Like gardening, knowing when to prune and when to harvest, a human responds to the same such rhythmical wisdom. People in such cultures are tended to with an understanding of these cosmic principles. Constraint is applied at the appropriate times, behaviours pruned, and new learnings grafted on at opportune moments of receptivity. All for the purpose of propagating higher levels of awareness and awakening to the true nature of who we are.

We could say a main diagnosis of our contemporary culture is a forgetting of self. An amnesia with regard to who we are, where we came from, and the purpose of our trajectory. This amnesia and lack of deliberate knowing has us vulnerable to our essence being diffused and the capacity we have as humans being used through us, not by us. If we are not at our own inner control desk, cultivating our life energy and directing it in heightened intentional ways, as both a being and as a culture, we are at risk of that energy being used elsewhere.

Once we cleanse ourselves, we begin to realise that we are a receptacle, a container, an antenna that receives signals. The importance of recognising this function in ourselves is that, whether we are cleansed or not, we are an antenna. We attract information. We hold it, incubate, and emulate it. This is happening regardless of any formality around rites or practices. As an antenna, without realising we have governance over which station we tune into, we are susceptible to receiving a signal which is not optimal for well-being and illumination.

The importance of undergoing initiatory rites allows a person to choose how they conduct their vision. To build this strength, initiatory practices put us through challenges. They are 'perturbation medicine', disrupting the momentum of things. They remove the comfort of the known and hurl us into a seemingly chaotic process of 'unknown', all to have us reconfigure with greater resilience and agility. In the same way, going to the gym breaks the tissue in our muscles so it can rebuild and strengthen in the repair, initiatory practices, ordeals, and psychoactive experiences break the usual perceptual pathways, allowing our neurocircuitry to re-form and realign with greater skill.

We create new pathways of perception and a new kind of seeing forms. This is a process of hormesis – creating challenge that gives rise to strength, where exposure to stressors is actually favourable. The intelligence in how much stress is beneficial is the artform of successful initiations.

The magic of it is that initiation happens in its own time. We cannot initiate ourselves or “be initiated”. We can only prepare the conditions. Initiation rites are a delicate preparation process that generates our readiness for the subsequent flowering. It is the natural order of things. We can tend to the soil, feed the roots, and prune the leaves.... but we cannot bring about the fruit or the flower. This happens in its own time. We cannot garden this. Like everything in nature, when it is ripe, it flowers. As organic beings, this is our blueprint, our coding, the template upon which growth is built. These rites and ceremonies serve to propagate our consciousness to more refined levels of perception.

One way of igniting our natural memory and awareness is through the use of plants - nutritional, medicinal, and psychoactive. They hold information that fits into and activates the information that we carry, like a biological docking station.

Plants are a way civilisations can store memory. In this two-way relationship, not only do we receive medicine and expansive teaching from plants, but we can implant them with knowledge too. Just as we become educated from engaging them, they become educated by the experiences we expose them to. Civilisations that recognise this exchange would use plant wisdom to carry and transfer knowledge through time. This self-propagates and is propagated, as it is seen as valuable by the attending culture, and the coded knowledge held within them reveals itself in appropriate settings later down the stream of time.

I say “through time”, though they are also portals into other dimensions where time has little meaning. So these parallel kingdoms are vehicles through which timeless wisdom travels. It weaves in with the templates of timeless wisdom within us, igniting them and enhancing evolution. In cultures that were awake, this was by intent.

Plant preparations are an external alchemy, mirroring and activating the internal alchemy of what we can do within the container of our own being.

The classical Chinese medicinal way of looking at the organs in the body is to see them as ‘gods’. Each organ is seen as holding a divine quality, performing a certain vital role in keeping the empire of our being running smoothly. They are centres of sentience and intelligence. In fact, they speak of the organs as the “thrones of the gods”. Our physiological processes are the expressions of intricate cosmological intelligence, and practices that link the microcosm of the body with the macrocosm of the universe can be done through our awareness. Communicating with celestial realms is a faculty well within our reach, as the workings of these realms function in our body as much as they do in the cosmos. Our physiological processes are actually the reflection of something much deeper and more mystical than we usually recognise.

Using our body as a conduit for transmuting consciousness then starts to make a lot more grounded sense. Integrating the support of allies such as those in the plant kingdom weave in nicely with this, being born of the same reflective wisdom.

Recognising the depths of the pathways accessed in the body, and preparing the vessel of our being, is a skillful way to meet any medicine half way. Music played in a noisy street is very different to music played in a sonic chamber. Allowing ourselves to be the space in which natural essence can be received, amplified, and echoed is a potent way to not only alchemise the substance being offered, but offer a symphony of being back into the cosmos.



'Kava kava'
Piper methysticum
(Kavalactones)

Belief and Reality

Keeper Trout

“[M]an always believes more readily that which he prefers.”

Francis Bacon 1620

Trust forms the basis for much of our lives. We want to have faith that what we are told in print is actually true. In some areas, such as politics and popular journalism, we know that faith can be misplaced. In scientific inquiry we hold that peer review and professionally rigorous study helps to ensure accuracy. This belief can stand in the way of clear sight and allow errors to become established as facts when one or both of those expectations are not met by people we respect and do not question.

Questioning is an important practice for people who want to know what is true as it helps ensure that errors and their impact are limited. Sometimes, established assumptions and deeply held beliefs by people we respect as authorities can prevent adequate questions from arising where they are needed. An actual book could be written on this subject, but for our purposes two examples might suffice.

A few years ago, a plant said to be San Pedro (*Trichocereus pachanoi*) was found in a Peruvian excavation at El Paraiso in a context dated to 4000 years ago by archaeologist Dayana Carbonel (Grupo RPP, 2016). Use of this San Pedro would be no surprise as such use is known to be ancient. However, in this case the plant was suspected to be *T. pachanoi* on the basis of such ancient use being known. In reality, the identity of the plant is clearly an error, calling for further study of this unique plant evidence. There is no actual need for further study if the plant found was San Pedro, as that plant is a known mescaline container that is solidly represented in archeological evidence and modern use. In this particular instance, the proposed plant identity needs correction. The plant is extremely desiccated, but the distinctively keeled ribs and pronounced areoles indicate it is not a *Trichocereus* and is more likely to be a member of *Neoraimondia* or *Weberbauerocereus*. There are rumors for both genera being used historically, and this was a potentially exciting discovery. One can hope that someday the specimen will be evaluated by a trained botanist for a better identification, as well as an analysis by a chemist.

It is certain that San Pedro use is ancient as it appears to be depicted in art at Chavin de Huantar. This places its use in a clearly religious context possibly as far back as 3200 years. One can find it said that an even older occurrence has established ceremonial use of the *Trichocereus peruvianus* some 10,000 years ago. In some retellings this is given as being found in a ritual context and that it serves as proof for the use of this cactus at that early date. In reality, this is wishful thinking that lacks adequate discernment as to what was found and its significance.

The archaeological site is called the Guitarrero Cave and is located in the Yungay Province of the Ancash Region. In it, material was found that unmistakably came from *T. peruvianus*. There is no question of the identity of this material, but in light of the assertion that this

discovery indicated the use of this cactus as a psychedelic at the date of its harvest, we should further detail what was actually found and reported.

Pollen was found, which is no surprise as *T. peruvianus* still grows near and around the cave itself. Nothing about the presence of pollen being found among the other local plant pollens indicates it was used as a drug. Pollen finds demonstrate only that the donor plant was growing in the vicinity.

Inside the cave (Complex IV, 8225 ± 90 years old) a “fragment” of a *T. peruvianus* fruit was found. The edible fruit is still widely valued as food when it is available. Lynch (2014) noted that *T. pachanoi* is a well known psychedelic in northern Peru but added that no evidence of use for *T. peruvianus* at this time existed locally, except for consumption of the fruit. So again, nothing that is supportive for an early knowledge of its drug use.

In one of the oldest strata (Complex IId, $10,180 \pm 130$ years old) a single spine-bearing areole was found. Not a pile of them or even a few, just the one. It is clear that it came from *T. peruvianus* but is a spine cluster truly indicative of drug use? If it really indicated that the spines were removed prior to use dating back to 10,000 years ago, one might anticipate finding more than one areole with spines or finding one in one of the newer layers they excavated. Their excavations involved nearly 8 millennia worth of food and textile plant debris that accumulated during the actual period of human use. Did 8000 years of use really only leave one areole behind as evidence?

One other artifact was also found and not properly identified in their work. The authors share a depiction of tools uncovered during the excavations (p. 233). The item labelled “thorn” is almost certainly a long spine from *T. peruvianus*. The sharp and stout spine would no doubt serve as a handy tool in some applications.

It is clear that Lynch’s team was familiar with *T. pachanoi* being used as a psychedelic and unsuccessfully attempted to find knowledge of this use for *T. peruvianus* locally. While it is tempting to think those ancient people at Guitarrero Cave used the plant found as a source of mescaline, no evidence offers any real support for the idea. Maybe they did know and use it - we should certainly not discard that possibility, but we also need to recognize that it is not yet established. How would the plant material in question even be ingested? This would have required more than just a few bites of plant material, as this was a pre-ceramic era (a ceramic vessel likely being necessary to extract and concentrate mescaline). Drying the material for use would have generated remnants, as would de-spining it for fresh consumption.

I suspect this observation might not be appreciated by some people who prefer to believe in the proposal of immense antiquity for *T. peruvianus* use. However, basing beliefs on facts and evidence is much better than basing them on extrapolated suppositions. There is certainly nothing wrong with proposing such a hypothesis, but questioning such proposals is every bit as valid as proposing them. Questioning is perhaps more important than hypothesizing, as true facts will always withstand questioning.

In science there is a process of moving from a hypothesis (an idea) to a theory (something testable) in hopes of establishing what is true. A common flaw in methodology is setting about to prove one’s theory. A problem with this idea is that it can be easy to appear to prove

something by cherry-picking elements that support it, designing studies with a confirmation bias and ignoring questions and observations that do not support the desired conclusion. This approach is actually commonplace when people set about to support religious or political ideology, but this has no place in good science.

A scientist with a theory should try to do everything possible to disprove their theory. The reason is simple. Only one piece of evidence disproving a hopeful theory needs to be found in order to defeat the proposal of the theory. If the idea is valid, it will not be able to be disproven. Sasha Shulgin commented on the importance of people not getting attached to their theories. He added that in cases when a pet theory was found to be wrong, the worker should celebrate this as they have just avoided wasting more of their time on an error (Shulgin, 2021).

Our expectations and desires should not be allowed to blind us to facts to the contrary. Conscious discernment of what is real and what is supposed is important if we want to hold beliefs that can withstand the tests of time.

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'Sonoran desert toad'
Incilius alvarius
(5-MeO-DMT)

The Ayahuasca dieta experience; utilising metacognitive skills and ritual to support integration

Dr Lani Roy

Ayahuasca dieta vegetalista process; a unique state space

The word ayahuasca comes from the Quechua, a language from the Andean region, with *aya* meaning “soul” or “dead spirit”, and *huasca* meaning “rope” or “vine” (Metzner, 2006). The word is used to describe the vine *Banisteriopsis caapi* (which contains a number of beta-carboline alkaloids with empathogenic and stimulant properties), the main ingredient of a natural psychoactive preparation used for centuries by indigenous groups from northwestern Amazonian countries such as Brazil, Peru, Colombia, and Ecuador for ritual, religious, and therapeutic purposes (Schultes & Hofmann, 1992) and more recently by members of syncretic churches and other spiritual communities in urban centres around the world (Dos Santos, 2016; see also Rodd, 2018) and the combination of at least one other plant, frequently *Psychotria viridis* (commonly referred to as *chacruna*), which contains the psychoactive agent N, N-Dimethyltryptamine (DMT) (Malcolm & Lee, 2017). The effects of the bitter brew begin after 30 minutes from ingestion, can last many hours, and have a reputation for creating profound visionary experiences, spiritual and mystical states of consciousness (Trichter, 2010).

The term ‘dieta’ in Spanish simply means diet. However, in this context, a diet encompasses a range of dietary and behavioural practices in which apprentices make lasting relationships with the spirit of specific plants, including ayahuasca. Prior to students being able to meet with a master plant, they must prepare a safe container in their body and energetic field to enter shamanic realms, which are believed to be inhabited by plant and animal spirits, ancestors, psychedelic imagery, personal, and ancestral information. In order to prepare, one must engage in a process of purification involving abstinence from sex, pork, red meat, sugar, deodorants, alcohol, caffeine, shampoo, toothpaste, oils, and processed food. It is believed that these processes help to cleanse the mind, body, and spirit, thus allowing the master plant the space to enter into the student for transformation (Aya Healing Retreats, 2020). Master plants are seen to be able to provide protection, guidance, and sacred knowledge to the apprentice (Cuya, 2022).

Putman (2016, p. 165) conceptualises the term multidimensional “state-space”. “Some people are driven to push against the edges of their state-space and expand the boundaries of their state-space map (p. 165)”.

I am one of these people.

The ayahuasca vegetalista dieta experience provides a unique opportunity to expand boundaries and explore maps of consciousness.... plant consciousness.

Self is narrative, and the narrative collapses in dieta.

The vegetalista lineage I work with typically diets for ten days which includes four mornings drinking a master plant, 24 hours fasts, and four Ayahuasca ceremonies. There is minimal talking, no touching, and hours of alone time. The dietero slips deeper into lucidity due to having a no salt and protein diet (only rice and plain vegetables). Ayahuasca and the master

plant provide a portal into the symbolic world; a world where plants dream (Jones, 2019). The dietero may experience archetypal realms, myth, non-corporeal forms, plant spirits and entities, a sense of being outside time and space, multi-dimensional portals, and the presence of a female, mother, or grandmother spirit (Fotiou, 2010). Over the dietero breaks down on many levels physically, spiritually, emotionally, and energetically. Simultaneously perceptions and understanding of development, religion, and cultural conditioning collapse and dissolve. The dietero's consciousness merges and morphs in symbiosis with the master plant. There is a deep space of yielding, unbecoming.... remembering. A pocket in time to reset and recreate self.

Altered states and altered traits

Our states of consciousness are impacted by a range of variables from the internal and external world, making them transient. States influence how we think, feel, act, and interact with cognition, memory, motion, motivation, core values and interpersonal dynamics, and our physical health (Puton, 2106; see also Izard, 2009). This model accounts for the wide variety of personality changes as we move about our day navigating and adjusting our behaviours and states across diverse contexts such as work, family, intimate relationships, and our social media profiles. We all embody personal state spaces, special realms that we can switch in and out of, for example, yoga, sex, ritual, celebrations, trance, and mediation spaces. We often oscillate quite naturally between state spaces such as sleeping, waking, and daydreaming.

In the context of psychedelics, people may experience scary, joyous, profound, and entirely novel maps of consciousness. Puton (2006) highlights that it can be difficult stabilising altered states of consciousness into a permanent state-based change due to the noetic and ineffable qualities of the psychedelic experience. William James remarked that mystical experiences are rarely sustained and often “fade into the light of day” (James, 2012). Stabilising and embodying these experiences into a meaningful narrative and permanent trait can be very challenging.

Metacognition: skills to navigate maps of consciousness and stabilise the view

In psychedelic literature we often hear about the importance of set and setting to curate and support the medicine experience (Hartogsohn, 2021). However, set and setting needs to be supported by specific skills. Metacognitive skills. Metacognitive skill development is the process of “thinking about thinking” and becoming aware of one’s experience of emotion (Brown, 2001; see also Churchill & Murray, 2020). There are links between metacognitive deficits and attachment issues, trauma, and mental illness, and it’s hypothesised that deficits in metacognition make it difficult for psychedelic medicine to integrate into a meaningful embodied narrative (David et al., 2012; see also Churchill & Murray, 2020). Daniel Siegel’s book *Mind Sight* provides a comprehensive description of the benefits of fostering mindsight; “a kind of focused attention that allows you to see the internal workings of your own mind” (Siegel, 2012, p.1). Metacognition assumes that there is higher order thinking that can be accessed to witness, monitor, track, and modify thoughts, feelings, and behaviours (Siegel, p.182). Mindsight and metacognitive capacities help us “looking within and perceive the mind, to reflect on our experiences” (p.3). We taste, touch, hear, feel, see, we intuit, and Siegel asserts that mindsight (metacognition) is “our seventh sense” (p.3).

Listed below are some examples of metacognitive skills that can support medicine work and integration

- Having an awareness that the self is a narrative that can be constructed and deconstructed
- The self is represented in multiplicity. We have parts and aspects to our psyche (roles,

behaviours, states, traits, etc.). Higher order thinking is having the capacity to 'be in the right mind at the right time' and to be aware when you are not (discernment and reflexivity).

- Positioning oneself as an observer of phenomena; by curiously exploring, tracking, monitoring, and observing what arises.
- Engage in reflective journaling and self-questioning.
- The capacity to observe thoughts and emotions as they emerge with self and others (and in the medicine experience).
- Monitor, comprehend and make meaning out of psychic content and parts of self that emerge across different states and stages of development and different maps of consciousness.
- Live in alliance with your values, goal, and ethics. Have the capacity to see if your system is out of alignment and seek solutions.
- Capacity to hold nuance and multiple competing perspectives.
- Recognition of the interconnectedness of all beings.

Metacognitive skill development supports grit, resilience, the ability to self-regulate, introspection, and somatic awareness. These skills can be tested and sharpened in the medicine experience.

Returning home; integration

As soon as you take that first mouthful of non-dieta food, and the salt begins to swim around your body the windows of lucidity close. The dieta portal is sealed, and the journey of integration begins. The first two weeks are fertile grounds to somehow try and embody and stabilize the lessons which were experienced in the symbolic realm.

The self is a narrative. Psychedelics help us to dissolve the self, to experience our own disorganised mind and the larger mind. If we employ metacognitive skills to help navigate these boundary experiences, we can be lucky enough to reorganise the mind; in the words of Dr Traill Dowie, we have the opportunity to “consciously and deliberately re narrativize our experience.... what story do you want to tell?”

Dieteros who want to embark on a voyage of re-narrativization often take a dieta with Chiric Sanango. This was one of my most profound dietas; Chiric is fondly known as the plant of yesterday, today, and tomorrow, creating a platform to examine, drop and recreate story.

Listed below is a model inspired by my mentors.

Stages of integration and supportive contemplative practices

The first stage: pre narrativization (immediately after- 3 days)

During this stage, the journeyer is offered a unique opportunity to reorganise and reorder their self-concept and perceptions. There is a distinct cognitive window of flexibility and malleability. In this phase, we want to prevent the ego from coming back online and practical, rational conclusions from occurring too soon, which can close down the medicine portal. Don't rush to reorder. Create an expanded space to sit with the symbolic.

Stay close to the colours, images, feelings, sensations, archetypes, myths, and qualities that emerged in the medicine. These can be captured in painting, drawing, sand play, sculpture, earth alters, dreams, poetry, journaling (to capture, not necessarily to understand), connecting with mantras, drumming, and nature-based therapies.

Body based practices can keep you connected to the felt sense of the medicine experience. The ayahuasca curandero that I work with is deeply connected to Tao's practices, such as Calligraphy Qigong, which is an incredible practice that helps sharpen our senses and subtle communication with energy and the breath. In the early stages after medicine, the quote 'The Tao that can be named is not the true and eternal Tao' is often helpful to meditate on. During this phase, we want to stay connected to the subtle qualities of the medicine and symbolic content and prevent the rational analytic mind from closing down possibilities too soon (Freetska et al., 2016).

Excessive caffeine, technology, politics, incessant daily news, poor food, and all the trials and tribulations of living in this modern-day world can pull us away from our medicine and our capacity to access our "seventh sense" our mindsight. These distractions can diminish our capacity to access the subtle realms of the plants. The medicine can't move in and thru us properly if we are full, fragmented, and blocked; characteristics which are far too common in our western neoliberalist society.

Second stage: stabilise the view (4-7 days post medicine)

This stage requires the journeyer to begin forming a more structured narrativization of what occurred in the medicine experience and what this means for self. What story do you want to tell? The process of journaling to understand becomes deeper, and many benefit from connecting with specific talk therapies. Internal family systems therapy can be very synergistic with medicine as it allows one to create dialogues and also explore symbolic representations of self to part; with this, meaning making often arises. Psychedelic integration groups can also support this process. Vocalising your experience, being seen, and heard, can be deeply healing and help the self-form to form a more expanded and stabilised view of what occurred in the medicine. In saying this, be mindful of boundaries and who is in your energetic field during these early days, as certain dynamics can cause contraction and cut the medicine.

Third stage: total narrative integration (first week and beyond)

In the ayahuasca dieta process, the self is collapsed, dissolved, and morphs with plant consciousness; we play and dive deeply into the symbolic realm to emerge with a new narrative and a new plant ally.

The third stage is a powerful stage of integration where one can utilise contemplative practices and the metacognitive skills listed above to make meaning and stabilise what this means within a larger self-narrative: including thought, affect, sensation, memory, and relationships. The journeyer has a sense of what story they want to tell; now it's about embodying this emergent self. How does this new story, this new version of self-show up in the real world of behaviours, ethics, and practices?

Engaging with archetypal psychology can help medicine work and integration. In the medicine we often experience the larger cosmic mind and her characters at divine play ("Leila" as coined by Hinduism). These archetypes present themselves in the faces of the community.

The wanderer, the joker, the grandfather. You can deepen your connection to aspects of self, the collective, and the mystery by seeing that we are all medicine carriers holding much larger blueprints and archetypal teachings. This post personal field of interconnectedness can help really land during the third stage of integration. What is your story, and what characters are you weaving with at the moment, who is in your community of relationships?

Community

Renaquilla is one of the master plants I have dieted on. Strangler figs typically kill their host but not renaquilla, she grows in harmony and symbiosis and lives off, and with the plants, she connects with. Surrounding yourself with friends who talk the plant language and can slip into the field with minimal language is deeply comforting. I remember saying to my Ayahuasero “you know that moment in ceremony, inside the icaro song line” I tried to sign how my consciousness went inside a musical tube that was carried into the universal mind (yes, this sounds crazy to most). He smiled and said, “Si Si”. I felt at that moment we both had been there. There is a felt sense and shared knowing of the dieta landscapes; this shared space is a unique medicine of its own.

Ritual; weaving with the symbolic

Icaro & Mapacho

Icaro song lines are a powerful medium to connect to the specific properties of the master plants and ayahuasca. Icaros can be used to cleanse, reset the mind and body, and drop into felt sense outside words, time, and space.

In my lineage, mapacho ‘*nicotiana rustica*’ is known as the master plant. Revered for its capacity to bring vision, clarity, and healing. A tobacco dieta can be deadly if you do not purge up the mixture after you drink it. I did a 5-day mapacho dieta in Peru with a very skilled tabacoarist (Tabaquera, 2022). Over those five days, I experienced the deepest stillness and connection as closest to what Echart Tolle often describes “the ground of all being”.

There are many ways to work with mapacho; you can smoke it, make offerings to the earth or the sacred fire. You can smudge and cleanse your home or energy body and use small amounts to bathe with. In my lineage, whilst you have mapacho you do not eat or drink or share it. The mapacho is your prayer and intention to work with. When lighting a mapacho you can call the great spirit of Wankatunka to support you and the four directions - north, east, south, and west. You can also blow smoke into your hand and place it on the earth acknowledging Pachamama, holding your prayer deeply as the smoke travels through the ether.

The Mesa carrier; a physical anchor to the symbolic realm

I am a mesa carrier; for more information, see Beery (2015). In my cloth bundle, I have my crystals, and seed stones which are programmed to symbolically hold the energy of various noustras (water bodies) and apus (mountains). These stones are programmed intentionally in ceremony each 3-month cycle with a specific focus on health, abundance, love, and spirituality as the themes to work with. This mesa holds all the plants I have dieted on. This bundle travels with me to ceremony and forms a place of prayer and contemplation, a physical anchor to the symbolic realm.

I am still developing my relationship with my mesa; it requires subtle discipline and focus. My curandero often says to me, “if you forget your mesa, then your mesa forgets you”. In integration, if we do not make attempts to reconnect with the symbolic realm, we can lose connection. Practices like being a mesa carrier, art, sand play, nature-based, music therapies, and poetry can extend and deepen our connection to the numinous in all phases of integration.

Dieta experiences do not have to “fade with the light of day” (James, 2012). There are a range of tools and practices to keep a thread to the numinous. The qualities and teaching of the plants from the symbolic realm can be made manifest in this 3D realm.

Michael Pollan states that “when you journey far and wide into consciousness, you bump into the sacred” (Pollan, 2018). I might add, that when you integrate with metacognitive skills and contemplative practices you can embody and stabilise the sacred.

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Meet the two researchers bringing VR to psychedelic therapy

Rich Haridy

Note: This article was originally published on the science and technology news site New Atlas.

A pair of unassuming Australian psychedelic researchers are proposing a radical paradigm shift to the way psychotherapy is conducted. The pair have developed a unique protocol for incorporating virtual reality into the still experimental mode of psychedelic-assisted psychotherapy, and it promises to shatter 20th century ideas of therapy.

Psychedelic-assisted psychotherapy is still a deeply experimental concept. While MDMA-therapy for PTSD has advanced to late-stage clinical trials and looming FDA authorization, other more classical psychedelics such as psilocybin and LSD are still in relatively early stages of research.

Agnieszka Sekula and Prash Puspanathan founded Enosis Therapeutics to explore ways of integrating virtual reality into psychedelic therapy. Underpinning the pair's philosophy behind Enosis is the idea virtual reality technology can help people connect more directly with the visceral nature of a psychedelic experience.

The psychedelic experience, according to Prash, is an embodied and emotional experience. Yet modern psychotherapy frameworks often work within protocols of cognitive therapy. It's this chasm between the ineffable nature of a psychedelic experience and the pragmatic, analytical structure of talk therapy that Enosis is trying to bridge.

"Anything that we can do to return things back to being more emotional, more embodied, or anchored to the true tenets of that [psychedelic] experience would be incredibly beneficial towards sustaining those insights," Prash said to New Atlas.

Most current psychedelic psychotherapy follows a conventional structure involving a few preparatory therapy visits, before one or more active drug sessions, which are then followed up with a handful of therapy sessions designed to help patients integrate the insights gained from their psychedelic experiences. A complete psychedelic-assisted psychotherapy protocol can span anywhere from eight to 12 weeks.

The protocol proposed by Enosis is both simple and radical. Agnieszka and Prash envision virtual reality being used across all stages of psychedelic therapy, serving as a kind of adjunct to help patients stay connected to those deeply resonant altered state experiences as the weeks and months pass.

"The way we are working is injecting VR in a targeted manner in different parts of therapy," Agnieszka explained. "We're using it for the entire process, from preparation for dosing, to integration, in every session if possible. In a way that maintains a cohesion of treatment so there's an environment that you keep returning back to that helps with the transition between therapeutic space."

Enosis proposes a number of different VR scenarios deployed at various stages of the therapeutic process. Early on, before any drug experiences, there are preparatory sessions designed to help acquaint patients with the VR space and frame certain intentions for the future psychedelic sessions.

Perhaps the most conventional part of the Enosis VR protocol is a kind of meditative 15-to-20-minute scenario dubbed “SurrenderVR,” designed to be played on a dose day, soon after a patient has consumed their psychedelic. The goal of this VR engagement is to help reduce a patient’s anxieties while they wait for the drug to take effect.

Both Agnieszka and Prash are very keen to stress VR is not used at all during the active psychedelic drug experience. This is not about tripping within a VR environment, so the introductory dose-day scenario is short and finishes at the point where a psychedelic experience is likely coming on.

The more interesting part of the Enosis protocol comes at the end of the psychedelic experience. At some point, four or five hours after taking the drug, another VR scenario is engaged. This one is dubbed “AnchoringVR,” and involves placing the patient into a calm beachside VR environment.

The patient is presented with a series of floating jewels. As each jewel is held the patient is prompted to describe an insight they garnered from the preceding psychedelic experience. Their own words are recorded and then attached to the jewels. The patients can record as many insights as they see fit, each connecting to a unique shape in this virtual beach environment.

When the patient returns to meet their therapist in the days and weeks after the psychedelic drug experience they re-enter that beach VR scenario. Every time a jewel-connected insight is touched they hear their own voice recounting how they felt in the moments immediately following the psychedelic experience.

Across multiple follow-up therapy sessions these insights begin to connect with each other in the VR scenario, creating a kind of three-dimensional visual map filled with interconnected ideas. Sometimes those ideas take the form of seeds, planted on the beach, and growing larger from session to session, other times disparate insights can join together to form larger clouds of realization.

This VR-driven mode of therapy feels unconventional, futuristic, and strangely apt in its relationship with a family of psychedelic drugs that are themselves known for destroying preconceived notions. It’s certainly a fun, interesting and unusual way of framing a psychotherapy experience, but does it actually help improve therapeutic outcomes or is it merely a shiny tech-gimmick?

Establishing the clinical efficacy of this kind of VR-assisted protocol will be a challenge considering psychedelic therapy itself is still in preclinical stages. But Agnieszka and Prash are certainly doing their best to try, with clinical trials in the pipeline.

The first real-world testing for the tech took place recently in the Netherlands. In collaboration with Swinburne University and the Psychedelic Society Belgium the Enosis VR system was trialled with four volunteers as part of a two-day psychedelic retreat.

Two main measures were investigated in this preliminary study, whether pre-session anxiety could be reduced using the early VR scenarios, and whether the post-session anchoring scenarios increased recall of psychedelic insights the following day.

The data has yet to be published in a peer-reviewed journal, however, according to Agnieszka and Prash these early tests were incredibly promising. Qualitatively and quantitatively the emotional state of the psychedelic experience could be measurably rekindled during the later integrative session with the VR scenarios.

“There were more memories than I thought,” reported one participant in this preliminary study. “I thought I didn’t need to start to record this but then I actually said more than I remember.”

Building on those findings Enosis is planning to commence a more robust clinical trial next year. That will directly face off the VR psychedelic therapy protocol against a more traditional psychedelic therapy protocol.

To be conducted in healthy volunteers and using the traditional psychedelic therapy framework as control, the trial will compare the effects of VR on reducing pre-session anxiety and more rigorously measure how well VR anchors the psychedelic experience and helps subjects reconnect with those insights in the following therapy sessions.

Ultimately, what Agnieszka and Prash are proposing is a relatively radical re-imagining of how psychotherapy can incorporate psychedelics in the 21st century. If, as researcher Rick Doblin envisions, there could be thousands of psychedelic therapy clinics around the world within the next decade, then Enosis sees no reason why VR can’t be one new tool amongst many designed to increase the benefits of this treatment.

Underpinning all of this talk around VR and psychedelic therapy is the idea that psychedelics are maybe not that well suited to our current medical models. So at its core the goal of using VR as an adjunct to psychedelic therapy is more about getting closer to a clinical framework better suited to the intrinsic effects of psychedelics.

Prash frankly points out it’s probably not ideal to try and jam psychedelics into whitewashed clinical spaces. Taking these substances in more natural outdoor environments would be a much better model, he suggests.

“While that would be optimal, that’s not scalable,” Prash said. “We understand that the Trojan horse to getting this into the mainstream is for it to be fit into the medical model, however, we recognize that that model isn’t optimal. So what can we do to approximate the unfortunate necessity of the one that we need to fit into, into something that is perhaps more closely related to what will be an optimal model? These are some of the tools that we can use to help us get there.”

While the first iteration of psychedelic psychotherapy has yet to reach mainstream clinics, researchers like Agnieszka and Prash are already trying to envision ways of making it work better. It’s a little like getting psychedelic therapy version 2.0 ready before 1.0 has been deployed.



'Tobacco'
Nicotina sp.
e.g. *N.rustica*,
N.tabacum
(Nicotine)

Challenging the Status Quo of the Challenge to the Status Quo

Agnieszka Sekula & Dr Prash Puspanathan

How can a robust understanding of the altered-state experience drive the development of therapeutic frameworks that are designed around that experience?

The “cab driver test” is a convenient metric of sentiment analysis to determine when a treatment or product has reached a hype cycle. For example, when your cab driver is advising you on experimental drug infusions or supplemental enemas, the information available to the public is probably beyond the purview of the specialists. For [psychedelics](#), the equivalent could be that when Gwyneth Paltrow produces a *Goop Lab* episode on the subject, the space has slipped out of the control of academia and science and is significantly being directed by market forces. It is no longer a “field”—it is now an “industry.”

These forces that dictate the direction in which the industry will grow and mature have shifted beyond the organicity of academic cadence. A keen eye would note the significantly disproportionate development of the industry: Of the 73 biggest companies in the psychedelic industry that have taken in \$3.26 billion in capital, \$2.9 billion is in drug development.¹ This is unsurprising considering the valuation multiples and revenue growth of pharmaceuticals compared with the other subsectors in the psychedelic ecosystem, including clinics, therapist training, and true academia.

Although most of the industry seems intent on developing novel and patentable psychedelic substances, a key factor that appears largely overlooked by the growth wave is, as one of the most prominent researchers in this field, Robin Carhart-Harris, PhD, titled his 2018 paper, “the essential importance of context.”²

Context, more commonly described in the psychedelic field as “set and setting,” refers to the careful preparation of the patient mindset before and while they go into the psychedelic session, along with the physical setting in which the dosing takes place—the structure, music, decor, and other environmental components. However, that is but the obvious, floating tip of the contextual iceberg.

Context is a multifaceted, all-encompassing construct encapsulating treatment setting, therapeutic relationship, cultural milieu, historical inclinations, and social attitudes. Although therapist proficiency is key to therapeutic sessions and drug development modulates the experiential moments of the psychedelic session, context is the only factor that works to support both the psychedelic-based and the therapist-based components. The critical role it plays in treatment is far from unique to the psychedelic field.

The Essential Importance of Context

If we consider the standard frontline pharmacological treatments for anxiety disorders, selective serotonin reuptake inhibitors and serotonin and norepinephrine reuptake inhibitors, these drugs do not ameliorate mental illness via a single dose, nor does their continued use in isolation provide a “cure” for mental distress. Despite the many drug treatments that are available, many patients do not respond to initial treatment or even to sequential trials of differing medications.

According to an FDA meta-analysis of antidepressant effects from 15 years ago³:

“Drug-placebo differences in antidepressant efficacy increase as a function of baseline severity but are relatively small even for severely depressed patients. The relationship between initial severity and antidepressant efficacy is attributable to decreased responsiveness to placebo among very severely depressed patients, rather than to increased responsiveness to medication.”

In response to that, Christoph Hiemke, PhD, wrote⁴:

“Current knowledge indicates that effects of antidepressant pharmacotherapy are a sum of nonspecific effects, placebo effects, and pharmacological effects....It is proposed that 3-armed studies in which participants are assigned to either drug, placebo, or no treatment enable to measure exactly the differential effect sizes of drug and placebo. Such studies, however, do not exist so far.”

According to personal correspondence from Luke Downey, PhD, a professor and head of the Drugs and Driving Research Unit at the Centre for Human Psychopharmacology at Swinburne University of Technology in Melbourne, Australia:

“A host of reasons are implicated in the relative efficacy of these pharmaceutical treatments, and even in the cases where treatment is effective, these clinical improvements do not occur in isolation. The effects of these drugs when used in a supportive context are very important. They give patients the opportunity to benefit from other treatments and interventions including cognitive-behavioral therapy, mindfulness meditation, guided imagery with relaxation, solution-focused therapy, and coping skills and other education that address both symptoms of mental illness and triggers of distress. These nonpharmacological factors such as client-therapist relationship and the setting of any clinical intervention are considered key moderators of efficacy in psychiatry just as the developing field of psychedelic-assisted psychotherapy needs to consider modifiable components of this treatment.”

Is it Time for Psychedelic-Assisted Psychotherapy to Embrace Technology?

According to William A. Richards, “Those who have known these profoundly meaningful states of consciousness have often shared them with no one, or only with those most intimately trusted, for fear of being misunderstood, called *crazy* or *weird*, or viewed as mentally ill.”⁵ At the core of the psychedelic-based treatment is its capacity to tap into noncognitive, experiential, emotional, and embodied processes of healing, which are far more difficult to achieve with talk therapy.

In his recent thesis titled, “Integrating the Ineffable: A Social Phenomenological Analysis of the Psychedelic Experience,” Logan Neitzke-Spruill stated that, “The common understanding of the experience as ineffable may indicate a general lack of affirmative frameworks for integrating these experiences.”⁶

In the words of Hamilton, one of the individuals who provided a narrative account of his experience with psychedelics, which were collected and published by Timothy Leary, “The experience is so fantastic in both its novelty and its power as to beggar all possibility of adequate depiction through words. The most that can be hoped for by way of description is an approximation, and only those who have had the drug can know how far removed from actuality the approximation must be.”⁷

When we consider this in depth, the psychedelic experience appears to have more parallels with the virtual reality (VR) experience than with talk therapy. Both create an intimate, personal space for healing and introduce the patient to an alternate reality, and both

experiences are characterized by ineffability. Utilizing those synergistic properties to explore and integrate the psychedelic experience allows more time for the emotional, embodied, experiential narrative to unfold, before it is analytically and logically processed. The psychedelic treatment model empowers patients to take responsibility for their own healing. The unique therapeutic process returns agency over one's mental health to the individual.

In congruence, technology has always enabled distribution of power. It allows new perspectives on existing problems, often guiding our progress in ways we could not have expected. We develop tech, which, in turn, reshapes us. One of the powerful, robust tools that appears to be uniquely suited for contextual design that supports the intimate, patient-driven pathway of recovery—sometimes referred to as “the inner healing intelligence”—is VR.

At the University of Bristol, a team of computer scientists led by David R. Glowacki, PhD, concluded their study on immersive VR environments: “It is possible to design phenomenological experiences using multiperson VR, which create the conditions for mystical-type experience from which participants derive insight and meaning.”⁸

The first-ever research study on combining VR with psychedelics was recently conducted by the authors in collaboration with Swinburne University of Technology and Psychedelic Society Belgium. Participants of this retreat-based study, which used psilocybin-containing truffles along with a bespoke anchoring VR designed by Enosis Therapeutics, reported that “VR brought me back to the feeling of something ineffable and a feeling of knowing,” and “VR soothed me before the talk integration process. It contributed to the sense of wonder and authenticity, and when you grab the stars, it feels beautiful.”⁹

Those synergistic, state-altering properties can be easily taken advantage of in therapy. For example, VR expands the mode of self-expression beyond current analog means with immersive, 3-dimensional tools or personalized spatial designs of the VR model, which can be used to create representations of thoughts, insights, or emotions experienced during the psychedelic session.

What is interesting and perhaps less obvious about this approach is that, while VR allows for a greater range of creative expression, the process of self-expression in a virtual environment also seems to challenge familiar modes of perception and activate a full-sensory engagement,¹⁰ reacquainting the patient to the experience of an altered state of consciousness. The intimate world of VR, which can be accessed without therapist interference, grants patients the unique opportunity of a space that can be used to explore and consolidate psychedelic experiences before they need to be verbally shared or discussed with another human being.

Technology leapfrogs many limitations of the analog system by offering an infinite number of levers with which to modulate the contextual design. This means that an entire range of possible solutions can be first thoroughly explored before settling on the best methodology. For example, in the current therapeutic model, patients transition from full visual range to having blindfolds on for the bulk of the psychedelic dosing session—an “all or nothing” model of stimuli exposure.

VR allows for controlled dosing of stimuli, providing an entire spectrum of stimuli intensity, complexity, range, and duration. Just as important, it allows individual control over the stimuli that form setting design (via individualized VR environments), as well as the ability for rapid shifts in setting to correspond with volatility of the patient's psychoemotional state.

Technology as Friend, Not Foe

According to Carhart-Harris, “Remarkably, despite its widespread adoption among psychedelic researchers, few controlled studies have ever been performed to test the assumed

relationship between psychedelics and context.”² Despite the apparent prioritization of “set and setting” in psychedelic research, the focus of innovation in the field is significantly skewed toward drug development while environmental and contextual factors are largely neglected.

In contrast to other medical fields, the human-technology interface is poorly explored in mental health care and almost entirely ignored in psychedelic care. A continued lack of dialog around the idea that technology could be a compatible resource rather than a competitive, counterproductive agent perpetuates the opportunity cost of the unmet potential of optimized healing environments in psychedelic treatment.

We believe that introducing technology allows an efficient and in-depth exploration of diverse contextual elements, which is of particular importance to a field that is only just beginning to take shape. This helps mitigate the risk of this paradigm-shifting approach to mental health treatment being shoehorned into incumbent psychotherapeutic models. A robust exploration and understanding of the altered-state experience should be the process driving the development of therapeutic frameworks that are designed around that experience—not the other way around.

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Exploration of the Witching Plants: A historical and personal journey

Seed SistAs

The witching herbs; the magical, poisonous European power plants are steeped in a tumultuous past. We propose that the story of these plants and their uses reflect the story of the archetypes they can be said to represent; the witch, the midwife, and the healer.

In learning to listen to the message of these mysterious plants, there is a possibility that we can create a new, balanced paradigm for the healing experience that is reaching altered states through the use of plant allies. All healing plants have the ability to shift our perceptions when we ingest or work with them. Some plants, more than others, unleash hidden, possibly innate knowledge and reveal secrets of the world around us.

This essay sets out to contextualise some of the European history of the witching herbs. We will look at how the cultural framing of these plants as ‘deadly’ and ‘evil’ has created the veils of fear and mystery that surround them in contemporary society. The historical oppression of women’s use of native ‘power plants’ has, in part, determined the way that the modern psychotropic experience is sought out in the UK and parts of Europe. It has become a consumerist model for self-healing in a lot of cases.

We believe, as herbalists and healthcare professionals, we need to re-build our relationship with the witching herbs, integrating a more yin approach to both the spiritual practice and the research of these valuable and beautiful plants. That is not to say that more analytical and measurable methods are obsolete, but that we could achieve a more balanced perspective when coupled with the revival of some ancient, female-led practices and methods of application. We will explore two of the *Solanaceae* family, henbane and datura, and consider what lessons can be learned from the plants themselves through exploring their history; decoding their messages, their modes of action, and preparation for use.

As herbalists, many of the plants that can be found in gardens, woodlands, and waysides are part of our tool kit. We love and respect each individual plant but the most interesting of all the plants, and the most misunderstood, are the ones that can also kill; the true poisons.

The witching herbs; the nightshades, foxgloves, and banes are closely linked in our culture to powerful female archetypes like the medicine woman, the witch, the healer, the midwife, and death-wife. When we look at our relationship with these plants throughout history, we can see a map of the fear and misunderstanding of these archetypes driven by cultural beliefs.

Women and Witches

All women that work with plants and healing at some point are labelled ‘witch.’ The vast majority of our society uses the term in a negative or detrimental way. The term ‘witch’ conjures up images brought to us through stories and films in popular culture. The idea of the ‘evil witch’ was brought into mass consciousness over 500 years ago as the Inquisition swept

through Europe. From reports taken during the Inquisition — of orgiastic rites carried out with the application of flight-inducing unguents to the vaginal mucous membranes using the ends of broomsticks — the image of the witch riding her broomstick was born. Printed images of flying hags and witches' communion with the devil can be seen in early texts as Christianity sought to eradicate opposing views to the church. There are woodblock prints dating to the 14th century that can be found depicting a hag flying around a cauldron. With the invention of the printing press, mass hysteria and fear spread. It was pure propaganda and set the stage for the fear that still exists today. We are brought up on fairy tales of evil witches; women twisted with hatred and full of cruelty, Hansel and Gretel, Rapunzel, Snow-white, Baba Yaga, and many others that routinely fill the heads of children brainwashed into believing witches are bad.

There is much written about the horrors of the Inquisition for women, and there is no scope here to go into more depth, but what is clear is that with witch-finders sweeping the English countryside and images of the flying hag, there was an atmosphere of fear and dread. Women have long held the secrets of the medicine of birth and death, and utilised creative energies to perform rites with a power that touches the void between the living and the dying. This was misunderstood and misinterpreted by the Catholic Church, as were the magical and healing arts in general.

The Witching Herbs

All herbs hold medicinal gifts, and all plants are teachers. There is no hierarchical code that deems one more important than another. Some, however, shout louder to us humans, exerting stronger physical effects and a greater ability to transport us to other realms, to open pathways both ancient and new. When used with care and full attention, these plants are potent enough to elicit massive shifts in perceptions and bring positive health changes both on an individual and societal scale.

The ones called 'the witching herbs' help to create the mysteriously magical and pleasurable, medicinal green unguent, the flying ointment. These pungent, alkaloid-rich fetid plants are the ones we value and revere above many others. These enchanted plants can relax the most debilitating spasm, will ease a dying man from his pain, and, if needed, walk his soul across the waters of eternity to the other side. These herbs have the potential to take you to magical realms, holding keys to the doors of altered perception.

The witching herbs symbolise personal responsibility, freedom, and the knowledge of women. Recipes for flying ointments containing the witching herbs were spoken of in hushed tones through the generations, from grandmother to grandmother, those called wise or witch, keepers of the secret knowledge. The witch trials were part of a complex shifting of power, thought to be leading folk out of the darkness into God's light, overlaid by a renaissance of sophistication, scientific discovery, and male-dominated power. They were, in fact, a genocide of traditional sacred knowledge, and we are still suffering the negative effects today. If you were found to have a green ointment (a great remedy for muscular spasm and pain) in your possession during the witch trials, you could be instantly deemed a witch, a crime punishable by death.

Trepidation around these herbs is still strong, and acceptance of the unknown is not something our society encourages. Misinterpretation of these herbs is rife. With a lack of research and knowledge, we have been in danger of losing the whispers from the past. Much of what remains is simply annotations from the trials of the Inquisition, where recipes gathered under duress can be found.

Solanaceae or Nightshade Family

Most of the Solanaceae family, which consists of over 2500 species, contain potent alkaloids. Important members of this vast plant family both feed and enervise our global population. Potatoes, peppers, and tomatoes feed millions whilst chilli and coffee stimulate the masses. The alkaloid content of these plants is what gives them their strong-acting nature. The power of these alkaloids can be seen in some of the plants we use as food. Look at the poisonous nature of the green skin of potatoes, or the endorphin releasing properties of the chilli. The word alkaloid derives from the term vegetable alkali, referring to the alkaline nature of these compounds. Isolated alkaloids generally have a strong bitter taste thus tend to act as digestive stimulants. The Solanaceae family contains some of the most powerful of these herbs, and we will focus in on henbane and datura.

Mechanisms

Both datura and henbane contain tropane alkaloids. Tropane comes from the Greek ‘tropos’, meaning ‘taking a turn’ or ‘adopting a new manner’, suggesting the transformative nature of these compounds. Tropane alkaloids act in part on the cholinergic system pathway of the nervous system, which is involved in the regulation of memory and learning. The cholinergic system nerve cells respond to a neurotransmitter called acetylcholine (ACh).

Our view of the world is in part shaped through how we respond to ACh, which is associated with several cognitive functions, including memory, selective attention, and emotional processing. ACh is therefore allied with consciousness.

ACh is also an initiator of skeletal and smooth muscle contraction. In the heart, ACh exerts influence over the maintenance of the rhythm of the heart at rest, a little like a natural pace maker. So, in heart tissue, ACh acts in an inhibitory way, reducing heart rate, whereas in skeletal muscles, it excites contraction and has a function that aids the movement of muscle and the mobilisation of joints. henbane and datura act as anti-cholinergic agents, which means that the alkaloid compounds within the plants have been found to sit on the receptors in the cholinergic system, increasing heart rate and decreasing muscle activity.

When we interfere with this pathway, as with datura intoxication, we can access more ancient, primal, and animalistic aspects of the brain, accessing our reptilian brain more directly. We can, in effect, reveal our ancient selves by cutting off some of the conscious awareness that we have from the cerebral cortex.

Henbane

Henbane, *Hyoscyamus niger*, enjoys the margins and edges of fields. The plant does not need rich soil but rather seems to prefer poorer quality hummus and will happily share a pot with another more nutrient dependant species. Henbane seeds are numerous and tiny, a light brown

colour with a reddish tinge. The most striking part of the plant are the purple/red veined white flowers, which are incredibly intricate and mesmeric. The leaves are sticky to the touch, emitting a fetid scent, and are covered in light, long hairs.

This plant has long been documented and has been deployed most often to sedate as a traditional alternative to opium. Compared with opium, henbane is more effective as a sedative since it does not result in constipation. Henbane can be used to induce sleep and calm unbalanced nerves. In ancient medicine, the seeds were heated over coal or charcoal until they produced fumes, which were then inhaled as a painkiller or other treatment for toothache.

Over the years, descriptions of this plant have become maligned. This useful medicinal ally is now often painted as a filthy, stinking, malodorous, or evil weed, giving it a sinister reputation as with all the witching herbs. Even having these plants growing in your garden could have been enough to be questioned for sorcery! Much had shifted between these times and those of the ancient Greeks, who considered henbane sacred to the God Apollo and a herb that walked in the light. During the Inquisition, a Christian wave of suppression induced fear and loathing of the very plants that brought us personal empowerment and powerful medicine.

Our work, sensory herbalism, teaches people how to build their own relationships with plants using their full senses, intuition, and close observation. Without fail, when we have given people the time to connect with henbane in a group setting, henbane initiates feelings of lightness, chatting, and laughter. We always notice that there is a willingness to talk about the reactions to this plant in comparison to datura.

Henbane, as we mentioned, has historically been associated with the sun god Apollo, a much more upbeat and jovial god than some of the others in ancient texts. Henbane was one of the main ingredients in beer before the first ever drug laws were initiated in Europe in the early 1500s. The 'Beer Purity Act' decreed that only hops could be added to beer. When you compare hops and henbane, it is clear that a much more sedative, numbing herb was added in place of an uplifting and psychotropic plant. Imagine the shift in energy this change produced in community celebrations, festivals, and rituals.

In modern western herbal medicine, a tincture is made from the aerial parts of the henbane plant, one part herb to ten parts 70% alcohol, and the dosage is recommended at 5-20ml per week.

Henbane contains the alkaloids hyoscyne and hyoscyamine, which together equal the amounts of scopolamine (thought to be responsible for a tranquillising or narcotic action) measurable in samples. These alkaloids are parasymphatholytic, meaning that they competitively inhibit ACh. Recalling that ACh initiates muscle contraction (except in the heart), this inhibition is largely responsible for the antispasmodic effects of the plant, making it useful in conditions where spasm is an issue, like Parkinson's.

In homeopathy, henbane is made into a remedy called hyos. The hyos remedy can be used for hyperactivity and behaviour disorders in children, hyper sexuality or sexual deviance, especially adapted to those who suffer from jealousy, victims of delirium, and people who are inclined to convulsive attacks.

Datura

Another herb of Solanaceae or nightshade family is datura or angel's trumpet. It has sticky stems, deep green leaves, elegant flowers, and spiky seedpods, flowering at night a luminous trumpet-shaped flower that appears like the full moon when looked at directly. The scent is notably more powerful at night when datura prepares to attract her pollinators. She tricks the moths with her moon-like appearance and sweet smell to pollinate her trumpets. Found growing in the most unlikely places, on waste grounds, in yards or where the soil has been upturned, gardens, and the edges of fields, she is common in the warmer climates of southern Europe.

It has been postulated that the cholinergic system is the regulator for the serotonin induced pathways of sleep. While serotonin has been widely established to initiate REM sleep, it looks like ACh has the role of ensuring safe awareness is maintained while sleep is occurring. It keeps us vigilant, enabling a filtration of sounds and eternal stirrings. We don't need to wake up if the wind blows outside or our partner moves in bed, but what if there are more alarming sounds at the edge of our conscious awareness? Appropriate production of ACh can filter these sounds and act as the guardian of our sleep. If we inhibit the effects of ACh, we are blocking the filtration system of our night's rest. Datura, with her high levels of atropine, unleashes a powerful force, representative of the more feminine power of the night, less discerning about what and how we perceive what we are experiencing.

Datura has a shadowy history that needs to be told and is long associated with werewolves, as many psychonauts have found in their journeys to other realms. Feelings of morphing into wolves, growing hairier, and hands turning into paws are common when under the influence of datura, especially when imbibed during a luminous full moon.

Medicinally, we use datura for the lungs, specifically as a bronchodilator. By opening up tight or restricted lungs, datura helps us to breathe more deeply, take in oxygen and fill ourselves up with life. In the 1970s and 80s the herbal company Potters used to make asthma cigarettes with datura that could be bought at any chemist without a prescription.

Unfortunately, many a trippy explorer dabbled with datura without prior knowledge of dosage. In the 1970s many burnt their psycho-emotional edges, often returning with tales of madness and lost days. The stories travelled throughout the alternative scene and spread fear into those experimenting with psychotropic plants. There is still a residue of fear that surrounds the beautiful moonflower, due to this association with death and madness. Datura does come without risks, but heroic doses are not required with this beautiful and mysterious plant. She demands careful consideration, respect, and small doses.

Atropine, one of the tropane alkaloids found in relatively large amounts in datura, is used in medicine to dilate the pupils before eye operations and as an anaesthetic. There is a syndrome caused by the over-use of the tropane alkaloids, the anti-cholinergic syndrome. There is a great ditty that helps us remember how to recognise the symptoms.

Blind as a bat,
 mad as a hatter,
 red as a beet,
 hot as Hades,
 dry as a bone,
 the bowel and bladder lose their tone,
 and the heart runs alone.

In the case of an excessive dose of datura you will see the symptoms described above, usually starting with an unquenchable thirst. The pupils also become dilated. With some large doses, as a result of the effects on muscle, the body will be very still while the heart is racing.

Interestingly, when used as a mind-altering agent, datura can often produce similar experiences amongst different people. This phenomenon has been documented since the mid-1500s when Andres Laguna (who served as a physician to the Spanish King) started to look more deeply into the effects of the plants that were being confiscated and interrogated during the witch trials. Andres Laguna was a scholar and medicine researcher who set about trying to prove that the visions folk were having came directly from the plants and not from direct communion with the devil. Laguna showed that even the wife of the executioner had similar experiences as those who were deemed, witches. His work was swiftly shut down under pain of death.

Datura contains more of the tropane alkaloid atropine than henbane. Atropine, named after Atropos, one of the Three Fates in Greek mythology, holds sharp scissors, determining how and when your chord of life is to be cut. Atropos is directly responsible for death. This naming instantly creates a picture of the powerful nature of this compound, and the darker side of datura intoxication. Datura is the feminine lunar archetype, a seductress capable both of offering great insight and powerful, hysterical madness, and must be revered and respected. Through her, we can connect with our intuitive self but also the dark parts of our psyche and ancestry that lay hidden deep within.

Atropine seems to exert the strongest cholinergic effects and has been more readily isolated for orthodox medicine than the other compounds. In our groups over the years, when tasting and connecting with datura, we have seen a much more introspective response to the herb. There is less chatter in the room, and folk are more reserved and say less when we ask for feedback about their symptoms.

Unfortunately, the witching herbs scared the 'powers that be' and thus fell into abuse, control, misunderstanding, and misuse. With the rise of patriarchy, God and governance and the following subjugation of the people, access to knowledge about these plants was quelled, panic ensued, and many beautiful and powerful herbs were destroyed. In many cases, these plants were literally ripped from the earth.

Through the use of these plants in measured dosages, or even just through their growing and presence, we can utilise the dream state entered to find answers to questions around our own health and the health of others. Further, we can form strong connections with our communities and connect through ceremony, common experiences, and understandings. We can become

more conscious and caring human beings, complicit in the knowledge that humanitarian actions and compassionate aims are paramount for all life on the planet.

Native Power Plants

There are many different ‘power plants’ from exciting and exotic far-flung places. Over the years, we have enjoyed and learnt from exploring these foreign plant teachers, but over the past thirteen years, however, we have been deeply drawn to hone our attention in on those that grow closer to our home, here in Europe, the British Isles.

Interestingly, it is our very own native or naturalised, particularly in parts of Europe, plants that are the least researched and the most shrouded in mystery. It is for these reasons that we began a journey of historical and personal research. We searched for information written in medical texts (ancient and modern), anthropological papers, herbalist writings, historical references, and annotations from the witch trials.

With the academic information gathered, we worked at connecting with each plant individually by growing and imbibing them, alongside investigations into creating different applications, tinctures, teas, balms, creams, and powders, drawing the plants, writing down our experiences and all the physiological and emotional effects we noticed. We discovered that the smaller the dose, the more profound the experience and long reaching its effects. There is no need to work with heroic doses.

Using these plants in what could be viewed as micro-dosing, helps mitigate the risks that surround them, undermining fears about poisonings or toxicity levels. Remember, even growing a potent plant is often enough to alter your reality.

These beautiful, insightful medicinal plants, when grown and imbibed in small doses, can bring great insights and wonderful experiences. Cultivating these herbs is often enough for them to enter our dreams and take hold of us in truly magical ways. Exploration into these herbs is exciting and relatively safe in very small and controlled doses, such as drops of tinctures diluted in water. It really does not take much to connect with and feel the spirit of a plant, especially ones as powerful as these.

Women’s use of native power plants was forced underground and swept the floor clean for male dominated patriarchy to run amok in the spiritual realm of ordinary lives.

The witching herbs are associated with the crone archetype. Connection with dark times, winter, madness, and poisonings and death (although this is infrequent) ties them further to this archetype. These herbs deserve the utmost respect. Demonisation and fear are enemies of education and connection, so we encourage careful and slow observation of all these powerful medicinal herbs.

A starting point for exploration of these herbs is to find them growing wild. Start in your local wild spaces, gardens, and parks. Go plant hunting; get a good identification book. Perhaps choose one particular plant and ask to be introduced to it. Go walking and see what you discover, and do not ignore anything that comes to you in these wanderings. Nothing is linear

in this woven world of magic. It may take moons of exploration and searching, but so much may be uncovered in this spiral of adventure.

If you get impatient, go on a quest for the seeds, both henbane and datura seeds can be bought from a variety of sources. Propagation and cultivation can offer more insight into these plants' qualities and personalities.

Conclusion

In certain dosages and preparations, the witching herbs can induce hallucinations. The word 'hallucination' in the Oxford English dictionary is defined as 'an experience involving the apparent perception of something not present'. Altered states of consciousness and indeed hallucinations can, in other cultures, be perceived as messages for healing from Spirit.

The approach of action and linear thought has extended into the way that folk in our modern era seek out the entheogenic plant experience. Not only have rituals with exotic psychotropic herbs been commodified, they are also often extremely prescriptive or hierarchical, with little room for the wildness at heart to be expressed.

The term recreation comes from the Latin recreation, originally meaning refreshment of health or spirits by relaxation and enjoyment. Unfortunately, there are some barriers in European culture to mixing spirituality and recreation, especially here in the UK, perhaps because images and ideas of the Christian church seem so in opposition to celebrating and partying with recreational substances. The spiritual experience overlaid by a conservative, guilt ridden, and sexist religion has not done wonders for social positivity.

For us in the UK, we have a spiral, chaotic and feminine tradition that can allow us to experience the spirituality of the henbane and datura. This tradition has the capacity to create connectivity and a sense of oneness, generating more awareness of others. The witching ointments, which contain both these herbs, amongst others, are and have been prepared in community and ceremony for many years, creating a space for all to be heard and a spirit of togetherness. The herbalist, the midwife, and the death wife, could all harness these magical herbal gifts, in their individual and combined crafts, utilised for health, birthing, and death rites. First, however, we must overcome the intense fear that surrounds these plants, and the negative female archetype of the witch.



SOME TRAPS AND PITFALLS OF THE PSYCHEDELIC PATH

Nick Sun

This article is a very brief outline of some of the traps and pitfalls of walking the psychedelic path of healing. Having spent the last six years as a facilitator in the underground scene, I witnessed around 2000 experiences, tracking how a wide variety of individuals moved through their healing processes, not to mention my own. This article details some of the common patterns I noticed.

There is a novel process occurring currently, as psychedelics are being introduced/reintroduced to Western consciousness in a way that is largely divorced from the traditional indigenous cultural context they might have once had. Ordinarily, these kinds of medicines were often reserved for the priests or the healer of the tribe for healing, divination, or initiation purposes. In other words, there was an accepted place in the culture for these medicines. In the contemporary Western underground scene, however, to some degree, it's open source, and we are witnessing the effects of this on a larger scale than ever.

Overall, I do think psychedelics are reasonably safe for most people when taken in suitable settings, with good intentions, guidance, and in reasonable amounts - but the further you walk this path, the murkier things can get. I do think the good psychedelics do far outweigh the bad, but we do have to recognise that we are all guinea pigs to some degree and that collateral is inevitable in any novel process. Let's face it; there are some casualties in the scene. Some get better and bring back maps, while others don't get better. Others don't even realise how cooked they are. Having taken the DIY self-initiation route, in the past I've been a bit cooked myself, which is why I decided to talk about it.

I just want to delineate that while this article is helpful for the newbie with a handful of experiences under their belt, it may be more pertinent to the more seriously committed guinea pigs and long-term psychonauts out there.

Ego inflation.

If you take a lot of psychedelics, you can end up blowing a lot of hot air up your own ass if you're not careful. I guess you destroy your ego so many times it keeps growing back like a thistle, more resilient than before. By then, it's no regular ego; it becomes the 'I-have-survived-ego-death ultra ego', which is even more of a tiresome bore than your regular ego.

I often wonder if ego inflation is encountered more in the west because of our individualistic orientation or because we have lost the traditional contexts of doing these medicines that were once grounded in the community.

Either way, even if you do think you're Jesus after smoking DMT out of a crack pipe, who gives a shit? Beware of fantasies or messages that stroke the ego; they can often be very intoxicating in the worst kind of way.

Not enough shadow work.

People can chase the peak experiences all they want, but it can become the law of diminishing returns. The benefits can be quite shallow and not as long-lasting as those experiences that delve into the very darkness that you may have spent your whole life hiding from. The most

challenging experiences I find are the ones that are the most potentially life-changing, the ones where you confront the darkness within in an effort to bring it into the light so it can no longer control you.

Opening up your field too much.

Psychedelics can open up your energetic field immensely. This can significantly increase your sensitivity, making you more susceptible to energies in your surrounding environment and people. What you gain from sensitivity can cost you in terms of resilience.

People can then become quite reclusive or avoidant in response. Sometimes this is a necessary phase for integration. Other times you may just be running away from the world.

You can also open up too much, then overcompensate by closing down to protect yourself from your surroundings. The artificial breaking down of what psychologist Wilhelm Reich called “character armour” can then result in a worse case of such armour later on.

Spiritual bypassing.

If you find yourself spending all your time in the purple dimension with Tinkerbell rearranging galactic timecodes, you may need to ask yourself honestly whether you are healing or whether you’re just avoiding.

Too much.

It’s hard to say how much is too much, but a helpful marker is if you are neglecting your responsibilities on Earth in order to trip all the time, you are probably trying to escape.

Earth realm fatigue.

If you trip often and deep enough, being in the flawed earth realm can become depressing. There can be a kind of emptiness, disinterest, and anhedonia can pervade your earthly life with a longing to return to the celestial realms.

Being led astray by visions.

Psychedelics tell you a lot of interesting stories that might not necessarily be the truth. These stories may have lessons, but you don’t need to take them all literally.

Dependency.

I wouldn’t say you can get addicted to psychedelics, but you can definitely become dependent on them for healing, feeling, or connection to something larger than yourself. Nothing is wrong with this, but it may be an obstacle to further growth later.

Running power through an unclean system.

In many spiritual development systems, the preliminary practices involve long periods of purification of the mental, physical, spiritual, moral, and energetic aspects of one’s being. Only once a certain level of purity is reached does the initiate receive empowerment, either from a guru, spirit, or plant.

Psychedelics run a lot of power through your system, and if your system hasn't been adequately cleaned beforehand, there can be consequences. E.g., while they may amplify your positive qualities, they can also strengthen your negative traits and neuroses. It's a bit like boosting the power load on a renovated house whose wiring hasn't been completely repaired yet. A lot of that power will be sent down old unnecessary circuits that haven't been cleaned up, or don't go anywhere at all. Some of these circuits might be powering maladaptive, self-destructive, or unseen shadow parts of the self.

You can see this process sometimes in people who do a lot of medicine. On many personal and spiritual levels, they can be quite advanced, but on other levels, they can remain deeply wounded children.

Becoming ungrounded/Vata aggravation.

Some psychedelics can activate the higher centres without first clearing the core wounds and traumas that often block our lower centres and prevent us from being fully embodied. This can create an energetic imbalance where the majority of the energy ends up in the mental area instead of evenly distributed through the rest of the body. This can have various negative consequences. You can become very ungrounded and disembodied.

It can also result in a condition that Ayurvedic medicine calls 'Vata aggravation.' Excessive energy in the mental space can cause anxiety, depression, nervousness, excessive thinking, worrying, scattered spacey feelings, over-sensitivity, confusion, etc... Basically, your mind loses connection with the body.

In spiritual disciplines, one would only open the higher centres of your field (as in like the third eye or crown chakras) after first clearing and purifying the lower centres and strengthening the nervous system first so it can anchor the higher frequencies. Nowadays, many people seem to be skipping this initial preparation step and blasting their higher centres first, then being forced to work backwards to learn how to ground and embody the charge. Maybe this is just the way it's supposed to be for these times.

People keep talking about the Ascension all the time, but ultimately I think it's all about descension — coming back down to Earth fully embodied.

Becoming an experience chaser.

People can become hooked on the fireworks of the experience but not the actual substance. It's like watching movies for the special effects instead of the thematic depth.

Doing too many different kinds of medicines at the same time.

You have a bucket list of medicines to do and, by crikey, you are going to get through them all as quickly as possible. You skip around from circle to circle, kambo to ayahuasca to san pedro to bufo to peyote etc. . . But really nothing is happening. You aren't growing. Maybe you have significant healings, but these healings don't seem to stick, eclipsed by the following considerable medicine experience you undertake.

Plus it's confusing to jump around all the time. All these different plant medicines and compounds have different messages and lessons that may conflict with one another, especially if you haven't integrated your previous significant experience before leaping into your next one.

It can be like a brightly coloured merry-go-round, but it's a trap of sorts. You can spend years going around in circles, yet you are convinced you are only one more ceremony away from

enlightenment. This may be in some part due to a lot of people in the psychedelic scene coming from a background of addiction or the party scene.

Creating the false belief that you need something outside of yourself to get you there.

With psychedelics you can become too focused on the key to the door, not what's behind the door. As Ram Dass put's it, 'The goal of the path is be high, not to get high.'

Plant medicines as a bandaid.

Sometimes I've seen people take the medicine every month or two, just enough to keep them going without really having to address the deeper, underlying stuff. There's nothing wrong with this; sometimes the only option is symptom management. But still, it's a loop people can get stuck in and can be an obstacle to further growth and deeper healing.

Thinking that psychedelic plants is all you have to do to sort yourself out.

You can get a lot of gains early on but often the further along you get, the more effort it takes to get to the real deep, underlying stuff. The more I walk this path, the more I realise that you have to do it all – the therapy, the embodiment, the meditation, etc. if you want to heal some of the deeper stuff.

Never letting the system settle.

Your system is like an etchasketch. Every time you do plant medicine, you are shaking it up and letting it reform in a hopefully more integrated, whole way. If you keep shaking it up before it has time to fully settle or ground, there can be energetic consequences to this.

Excessive Apophenia.

Apophenia refers to the human tendency to see patterns and meanings in random information. This ability has an evolutionary benefit, but it can become delusional thinking when it becomes too ungrounded.

The problem is systemic.

I began to realise a lot of illnesses that draw people to the medicine are largely systemic in nature. Stress, depression, anxiety, and meaninglessness are not because of any independently arising sickness within the individual but because of the sick system they're embedded in. So then, how does one truly ever get 'well' when enmeshed within a system that makes you unwell? There is no set solution at this point. Still, with the mainstreaming of psychedelics, there's a chance they may just become another mass-produced bandaid to keep an unsustainable system going rather than something that could possibly change the fabric of the culture itself.

You start loving music that you used to think was shit.

One time driving home from a circle I heard a song on the radio and thought it was the most beautiful music in the world. 'Is this the angelic music of the spheres?' I asked myself. It was Enya. And you know what? I still think she's awesome.

Yep, that's some permanent brain damage right there folks.

Strychnine!

Keeper Trout

This is a conference about psychedelic plants, so why would I want to write about strychnine? Strychnine occupies the center of an amazing amount of mythology sometimes held with fervor. We've all heard about strychnine being in a surprising number of common psychedelic plants and drugs. It is commonly said to be the culprit underlying nausea, abdominal distress and other unwanted side-effects. This commentary was created in hopes of sifting some facts out of the fiction.

It might surprise you to hear anything positive said about strychnine. A century ago, it was a not uncommonly used tonic and stimulant (Eli-Lilly & Co, 1925). As substances with less risk of adverse side effects became available, strychnine's use almost disappeared outside of limited rodent poisoning (e.g. Solutions Pest & Lawn, ND), human sports doping (e.g. Tremlett, 1992), horse racing (e.g. Thornton, 2019) and cock fighting (e.g. United Poultry Concerns, ND) which continue to use its stimulant properties. In reality, strychnine is not a common alkaloid. Useful amounts are known only from around a half dozen members of the *Strychnos* genus (Philippe, et al. 2004), which occur as tropical trees and shrubs.

It is peculiar how much bad information exists on this topic among reputable and respected botanical, phytochemical and medical professionals. For example, James Duke's phytochemical database states as a fact that *Argyreia nervosa*, aka Baby Hawaiian Wood Rose, contains strychnine. As readers we want to assume that we can trust Dr. Duke. While it is certainly a commonly held bit of tripper lore that one must carefully scrape off the outer fuzz from the seeds to reduce the strychnine content, no analysis has ever reported strychnine in any part of the plant. Duke (1992) did not include any reference for the claim but this misconception appears to have originated in print around half a century ago with Adam Gottlieb, AKA Mary Jane Superweed, before being spread by others (Superweed, 1970). Consumption of *Argyreia nervosa* seeds causing nausea and abdominal distress due to strychnine has become an established belief based on this literature. The claim had included *Ipomoea tricolor* morning glory seeds several years before similar claims arose about LSD (Bieberman, 1965). These plants have been repeatedly analyzed (for review, see Paulke, et al. 2015). All reports show they contain vasoconstricting ergot-type alkaloids and never any strychnine. There is no question that people commonly experience nausea and discomfort if they ingest the seeds. At risk of triggering some people's beliefs, this might be a good point to mention that strychnine rarely causes nausea or abdominal distress in humans even in cases of fatal poisonings (Otter, et al. 2019).

So just what does strychnine do? Strychnine is a reversible, competitive antagonist of postsynaptic glycine receptors in the spinal cord and the brain (Otter, et al. 2019). This interferes with the normal action of glycine inhibiting striated muscle contraction so there is inadequate control for reflex stimulation of motor neurons. This leads to a painful involuntary muscle spasm involving all of the skeletal muscles. Strychnine also produces elevated neuronal activity and heightened sensory input that leaves the consciousness clear and unclouded (Otter, et al. 2019). This is why some people have used it as a pro-sexual

adjunct; leading to the popular idea that strychnine is an aphrodisiac. All the senses become hypersensitive. The sense of touch, smells and tastes are amplified, noises are louder, the sense of vision also increases in sensitivity. This is accompanied by a tingling sensation on the skin and the extremities. When a dose is strong enough, a convulsive episode can be triggered by any sensory stimuli at all; even a noise, unexpected light, a movement within their view or being touched. During the convulsion, all of the skeletal muscles contract in a spasm, often arching the body and curling the extremities. This lasts for a minute or more. Afterwards the muscles totally relax. This may repeat in around 10 minutes. If the convulsion lasts long enough it will be fatal by preventing breathing. Occasionally the deprivation of oxygen can cause brain damage instead of death. If not, people recover rapidly and completely as the body is able to effectively metabolize and excrete strychnine (Otter, et al. 2019).

Like how many people believe that they ingested real mescaline obtained on the street during the 1970s, many people believe they have experienced strychnine. However, in contrast to strychnine, a few of those people did actually experience mescaline (Brown & Malone, 1973). The most common source of claims for strychnine in drugs is drug war propaganda. Strychnine has been commented upon as being found in almost every popular drug. Seemingly if something causes nausea and abdominal cramping, strychnine often gets the blame despite nausea and abdominal distress not being a normal part of strychnine poisoning in humans. Amazingly even cannabis has been said to contain strychnine despite there never being any analysis of cannabis reporting strychnine.

It is rather common to find it said in authoritative medical reference works that cocaine can be found cut with strychnine. The purported incidence ranges from uncommonly to often. If a reference is included it invariably does not support the claim (e.g. Cole, 2011). In the 2020 edition of the *Handbook of Toxicology of Chemical Warfare Agents*, Jiri Patocka suggests that “seizures observed occasionally after cocaine application may be caused by admixed strychnine.” This is a very typical example of what can be found in the toxicological and medical literature. The first reference given was the third edition of the *Clinical management of poisoning and drug overdose*, which purports [Strychnine is] “Sometimes found as an adulterant in illicit drugs such as cocaine [...]” (Haddad, et al. 1998). As is the most common case, no reference was included for the assertion in their first reference. The second reference, Wijesekera *et al.* (1988), looked at strychnine and arsenic that was present in Asian opium and heroin and does not mention anything concerning cocaine, or cocaine-related seizures.

There has never been any instance when a sample of cocaine has been found to contain strychnine. This is despite what must surely be in the tens of thousands of forensic analysis of samples of seized cocaine. Some poisonings and even deaths do exist involving people ingesting pure strychnine believing it WAS cocaine but cocaine was not detected in any of the people involved (O’Callaghan, et al. 1982). Consumption of pure strychnine under the mistaken belief of it being cocaine does not indicate cocaine has been cut with strychnine, yet this is apparently the entire basis for the belief. Once a medical doctor or other trusted professional puts a mistake into print, especially in peer reviewed literature or medical reference works, this mistake easily becomes a factoid zombie that cannot be killed with facts (Presti & Beck, 2001). Finding pure strychnine being sold as any drug at least suggests the possibility of murderous intentions (O’Callaghan, 1982; Decker et al. 1982). Many other drugs have been falsely suggested to contain strychnine with no supporting analysis.

If looking at the actual analytical results that have been published, forensic analysts have repeatedly stated that they did not find strychnine in any of the samples believed to include strychnine (e.g. Brown & Malone, 1973; Johnson & Gunn, 1972). There are four known exceptions of strychnine and street drugs being combined;

1. Analysis has found strychnine both tableted and encapsulated combined with the cholinesterase inhibitor, benactyzine (Bureau of Narcotics & Dangerous Drugs, 1972).
2. Strychnine has appeared with or as speed during some time periods. Some instances such as white-cross distributed during the years 1973 to 1977 were found to include strychnine or brucine (the 2,3-dimethoxy analog of strychnine). Commonly one or both were present instead of amphetamine but sometimes were accompanying it (Perry, 1977). These were just two of the potential ingredients included in a wildly variable range of white-cross tablet compositions and drug combinations that has involved many drugs (e.g. Drug Enforcement Administration, 1975; 1976).
3. Another drug where strychnine has shown up now and then is heroin. However, this has never been common and is largely limited to what is intentionally formulated for smoking (Eskes, et al. 1975). The reason is not clear. When it is present, caffeine and/or barbituric acid are also present and those are much more common without strychnine. Their inclusion decreases the drug's boiling point; increasing volatility and lessening degradation during smoking. Both are largely destroyed in the process. There is no evidence that strychnine shares the same property although 93% is similarly destroyed (Huizer, 1987). So why is the strychnine there? The leading suggestion is that it was due to someone believing it imparts a desirable taste. This is assumed based on the strychnine-heroin pills that were smoked in China in the 1920s, but it is really only someone's guess (Wijesekera, et al. 1988). Des Tramacchi speculated that its stimulant action may have been intended to help offset the drowsiness of the heroin.
4. LSD is the most well-known substance as contaminated by strychnine, but this has largely been a myth. While it is easy to find claims asserting this to be common, the vast majority of analysis, including by federal law enforcement, have been unable to find strychnine in any LSD samples (Johnson & Gunn, 1972). Many people have believed claims such as, "Much of the LSD turning up on the streets was fortified with some sort of additive, usually speed or strychnine" (Lee & Shlain, 1985). The only reference given in that instance from the book *Acid Dreams* was personal communication with Dr. William Abruzzi, AKA "The Rock Doctor". When Abruzzi spoke to the press in 1970, he claimed that 30% of the acid at the Powder Ridge festival in Middlefield, Connecticut contained strychnine (Anon, 1970a). Comments made to the press by Abruzzi, and others, may possibly have contributed in stimulating the appearance of strychnine which he claimed was added to "give a faster and better high" to LSD (Anon, 1970a).

What is most notable was his claim of treating hundreds of people poisoned by strychnine and most of them only required being talked down (Anon, 1970b). If a person is having problems from strychnine, this would not only be ineffective but counterproductive. Medical responders reacting to a suspected strychnine intoxication would move that person someplace with as little sensory stimuli as possible (Haddad, et al. 1988). A busy emergency tent at a rock festival with a friendly supportive voice wanting to talk would be among the worst choices.

There are three instances on record where strychnine was actually found combined with LSD. All of them were in the northeastern US during a 1–2 year long interval.

1. Schnoll & Vogel (1971) reported observing what they thought to be strychnine in 1 of the 10 LSD samples they had obtained in Philadelphia from rock festivals or on the street during a 6 month period. They used TLC and colorimetric reagents with known reference standards.

2. James & Bhatt (1972) reported finding a single tablet containing LSD and strychnine. It was one of 41 samples purchased as LSD over a 16-month period in the state of New York. Most of their LSD samples were tablets but it is not specified in what form they observed strychnine.

3. On 18 July of 1972 the BNDD issued a public health warning after analyzing capsules containing up to 10mg of strychnine with LSD. These were said to have been sold as mescaline in upstate New York. There were no injuries from it and no further reports but apparently several people sought medical attention (Bureau of Drug Abuse Control, 1972; Anon, 1972). It was analyzed in the same facility used by James & Bhatt (1972).

In addition to a mainstream media meme trumpeted during 1968 through 1971 claiming strychnine to be in LSD (e.g. Schoenfeld, 1969), columns appeared in underground newspapers that regularly presented percentages of drugs including their purported strychnine content (e.g. Anon 1971). It may be coincidental that the appearance of LSD combined with strychnine came following media claims which had included the assertion that the combination increased the effects of LSD. This could also be an instance of life imitating the media.

Intriguingly, when actual street drug analysis programs began publishing ~1972 (e.g. Brown & Malone, 1973), most of those underground columns we mentioned earlier ceased to exist. In one case in Michigan the column persisted but began to say strychnine had never been found in acid and forgot about what had been appearing in the purported results of Centerhouse's anonymous "underground chemist" (Anon, 1972b). It is known that the FBI used counterculture publications as venues of propaganda aimed at antiwar protesters (Davis, 1977). It is anyone's guess whether this was a part of that effort but the timing of 1969-1971 does coincide with the final years of their operation. In the years that followed, the claim continued in the popular press (Anon, 1980) and can still be found in public information coming from law enforcement agencies and drug treatment promoters, but has never again appeared in any published forensic analysis.

Peyote is widely believed to contain strychnine. This appears to possibly be how and why nausea and vomiting became associated with strychnine in the popular mind. Sometimes the hairs are said to be the part containing strychnine and removal of strychnine is given as the reason for cleaning them from the peyote before consumption (Anon, 1971b). Analysis has found the hairs to lack any alkaloids (Hart, et al. 1972). Strychnine has never been found in any analysis of peyote.

Lewin and Heffter were the origin for the conceptual association between strychnine and peyote when commenting on a "strychnine-like" action for some of the alkaloids. This

observation was in reference to their action when injected into a frog and nothing else about their activity resembled that of strychnine, despite how many times that claim has appeared in print. I would invite skeptics to read the original accounts as there is nothing else in Heffter's own bioassays which resemble the effects of strychnine. Both Lewin and Heffter commented that the observed actions of peyote alkaloids were distinct from those of strychnine. Even pelletine showed the same "strychnine-like" action on frogs as did the other isoquinolines but due to it having a sedative action, Heffter decided to move it out of his "strychnine-like" into his "morphine-like" category. Only mescaline did not produce the "strychnine-like" action when injected into a frog (Heffter, 1898; 1894). Mescaline does however commonly cause nausea and vomiting even when pure.

I hope that you enjoyed learning more about strychnine. I'd like to summarize this with two useful facts, the likelihood of ever encountering strychnine in LSD and most other drugs approaches zero, and if a psychedelic plant or drug produces nausea, abdominal distress, or "coma", it is not due to strychnine being ingested.

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*For a more extensive & annotated version of this reference list, please visit Keeper Trout’s website (<https://troutnotes.com/pdf/EGA/EGA-Strychnine-references.pdf>).

Tobacco substitutes in Australia – The non-Indigenous experience

Snu Voogelbreinder

[This is an abridged written version of a talk to be presented at EGA 2022, with phytochemical information excluded for brevity and simplicity.]

Although Australia has many native species of tobacco, for the British colonisers the ‘real’ tobacco they used came from the American species *Nicotiana tabacum*, and sometimes *N. rustica*. Tobacco was imported by sea in the early years of colonisation, a valued commodity with an erratic supply. Experimental cultivation began in NSW (Emu Plains) in 1818, being grown on a larger scale by farmers in Hunter Valley from the 1820s; cultivation began in Vic and Qld in the 1850s.

Due to distance, bandits, and sometimes hostile locals, the transportation of goods – or travelling to a town to obtain goods – could be slow and dangerous. Those in poverty may not have been able to afford to buy tobacco, much like today in this country. These factors meant that people who enjoyed their tobacco habits could not always secure a supply, and naturally alternatives were sought that might provide a satisfactory substitute until ‘real’ tobacco could be obtained. The same held true for experimentation with substitutes for tea and coffee.

Although people of European descent consumed tobacco by smoking, chewing and snuffing, the only evidence I’ve found regarding tobacco substitutes used by these people is for smoking, or mentioned in ambiguous terms such as “used as tobacco”. In contrast, indigenous Australians of the arid regions primarily chewed tobacco (either “whitefella’s” tobacco, or the dried green leaves of the native species), with smoking being an approach introduced by outsiders.

***Nicotiana suaveolens*, *Nicotiana* spp. (Solanaceae)**

When white Australians learned that this country had its own native tobacco plants they quickly experimented with them as possible substitutes or replacements, trying to cure and process them like ‘real’ tobacco (Walker 1980). Mostly this was applied to *N. suaveolens*, which is not a species favoured by indigenous users, but was relatively common in eastern Australia. In earlier days, numerous *Nicotiana* species were lumped under the name *N. suaveolens*, so it’s difficult to be sure which species were being experimented with. However, general consensus was that *N. suaveolens* made a poor substitute for the real thing. Some of the more potent species, such as *N. benthamiana*, *N. excelsior*, and *N. gossei*, are sometimes smoked by non-indigenous Australians to this day, although in my opinion, they are better appreciated by chewing.

***Duboisia hopwoodii* (Solanaceae)**

Pituri, the famed indigenous drug plant, is usually rich in nicotine, and therefore it is not surprising that “bushmen sometimes smoked the leaves when their tobacco ran out” (Low 1990).

***Solanum mauritianum* (Solanaceae)**

This is a weedy introduced plant, which can grow to the size of a small tree. The leaves look a little like tobacco leaves, and being called ‘wild tobacco’ has probably been the main factor in tempting people to try smoking it. The effects are unpleasant, making people feel sick and a bit intoxicated. I’m yet to hear of anyone who enjoyed it; people tend to try it only once.

***Verbascum thapsus* (Scrophulariaceae)**

Another weedy introduced plant, known as mullein, which also looks a bit like a tobacco plant, except for the flowers. It has been smoked as a tobacco substitute or in smoking blends in many parts of the world, often for its therapeutic effects in relieving asthma and coughs. Chewing them for this purpose would be inadvisable, as the hairs that cover the plant can cause itching and irritation in the mouth.

All parts of the plant, except seeds [reputedly toxic], have been used medicinally for various ailments, usually as a finely strained tea, and are attributed nervine, sedative, hypnotic, analgesic, antispasmodic and other activities. The seeds have been used as a fish poison. In N. America, the Forest Potawatomi used a leaf smudge “to revive an unconscious patient”. The Roman general Agrippa claimed “the scent from the leaves had an overpowering effect on demons”, and the Greeks and Romans used the plant as a candle or torch “at funerals or other holy ceremonies” (Riaz et al. 2013; Turker & Gurel 2005). The leaf smoke is extremely mild – almost like smoking air – although I have never noticed any psychoactivity from the small amounts smoked many years in the past. Although mullein is often found growing alongside major roads, these plants should not be consumed in any way, as it’s likely they have absorbed various pollutants.

***Apalochlamys spectabilis* (syn. *Calea spectabilis*; *Cassinia spectabilis*) (Asteraceae)**

This plant has been called ‘native tobacco’, but this appears to be due only to the tobacco-like appearance of the leaves. I can find no record of this plant being used as a tobacco substitute, but given such a common name, it would be surprising if no one had ever tried it. The related *Cassinia arcuata* – drooping cassinia – of s.e. Australia has long been known as Chinese tea-scrub or simply Chinese scrub. The Chinese connection is due to the incorrect belief that the plant is a weedy introduction that came with Chinese people working in the colonial goldfields of Victoria, who used it to roof their huts (Parsons 1973). Whether or not the plant was ever used as a tea substitute remains uncertain.

***Blumea axillaris* (syn. *B. mollis*) (Asteraceae)**

This plant from northern Australia is called springbush tobacco, but it is unclear if it has ever actually been used as a tobacco substitute. Incidentally, in Thailand *B. balsamifera* (naat) is believed to scare away ghosts (<http://www.bangkokpicture.com/unusual/maenak.php>); in China, it is used to treat skin disorders, rheumatism, and other complaints, and is also burned as incense. It is used to “induce resuscitation, clear heat, and relieve pain”. The Yoruba of Nigeria refer to *B. aurita* as eru-tabá, or ‘slave of tobacco’, but it is unclear what this means. The plant reportedly smells strongly of culture excrement (Burkill 1985-1997). In Fiji, *B. milnei* is called viavia tobacco; like the others, it has some medicinal uses (http://www.canbr.gov.au/cpbr/cd-keys/RFK7/key/RFK7/Media/Html/entities/Blumea_milnei.htm) but is not

known to have been used as a tobacco substitute. Some people say these plants are called tobacco because their leaves look tobacco-like, but this resemblance is extremely superficial, and in mature plants, non-existent. *B. laciniata* has been referred to as having been used as an [apparently ineffective] opium-substitute (Lewin 1931).

Calomeria amaranthioides (syn. Humea elegans) (Asteraceae)

Known as incense plant, plume bush, and wild tobacco, leaves of this plant were reportedly smoked as a tobacco substitute by some ‘new Australians’ (Thornton 1952), probably prompted by its appearance. I can find no record of whether anyone found it a satisfactory smoke. This aromatic plant resembles tobacco when young, though definitely not when in flower. The plant “upon being bruised emits a delightful scent, so overpowering as sometimes to produce headache”. Cultivated in Europe in greenhouses, it has been reported as causing dermatitis and sometimes intense irritation of the eyes, although such claims are apparently not known from Australia (Maiden 1913).

Elephantopus mollis (Asteraceae)

An introduced weed in Qld, originally from the tropical Americas. It is probably called ‘tobacco weed’ because of the tobacco-like appearance of its leaves. I haven’t found any report of it being smoked as a tobacco substitute in Australia, but it likely has been. This species has shown some anticancer activity experimentally (Li et al. 2016; Ngoc et al. 2020). Some botanists consider it synonymous with *E. scaber*, which is used in Chinese medicine to treat chest pain, bronchitis, fever, arthritis, and other disorders.

Olearia argophylla (Asteraceae)

The leaves of this plant [musk daisy bush], said to have a musky, tobacco-like aroma, were once smoked as a tobacco substitute by gold miners in s.e. NSW. They were smoked straight or sometimes mixed with molasses and pressed into plugs. Apparently, this made such a good substitute that some people came to prefer it to ‘real’ tobacco (Anon. 1935a, 1935b; A.T. 1951; Eureka 1941; Thornton 1952). Incidentally, ‘bush’ is a misnomer as this species can grow into a tree over time. The plants that I have encountered in central Victoria have a subtle musky smell, more pronounced when handling and chopping the leaves, but do not smell like tobacco; perhaps the aroma changes at different times of year, or perhaps other populations may possess this aroma.

Banksia spp. (Proteaceae)

Some white bushmen, including loggers in s.e. NSW, used to smoke the central spike of *Banksia* spp. flowers, or a piece of root or stem, as a cigar substitute – “You have simply to light one end and suck the other” (Anon. 1935a, 1935b; Eureka 1932; Smoko 1938). I have tried this with a *B. marginata* flower spike and found it to be unworkable, as the spike is not porous lengthways, and no amount of sucking will draw air and smoke through it. Perhaps other species may be more suitable, although I am yet to spot one (pers. obs. 2018). Not knowing any of this, in recent decades, some individuals have tried smoking flower parts of *Banksia* spp. such as *B. marginata* as a Cannabis-substitute, resulting in some mild psychoactivity. Rather than trying to smoke the flower cone like a cigar, this has been done by smoking the crumbled non-woody parts in a pipe (pers. comms.; pers. obs. 2017). The cones

have, however, been used to carry fire over long distances by lighting one end and leaving it to smoulder whilst walking (Clarke 2007). In Kalumburu, n.w. WA, cones of *B. dentata* used to be burned as incense for Christian ceremonies in the Mission Church (Karadada et al. 2011).

Dodonaea spp. (Sapindaceae)

Some white settlers smoked wild hop bush flowers [presumably a *Dodonaea sp.*] as a tobacco substitute (A.T. 1951). These plants were called hop bushes by the new arrivals, who apparently saw some resemblance of the fruit capsules to the flower cones of true hops [the unrelated *Humulus lupulus*] and therefore used them in brewing beer as a hops substitute. However, no part of any *Dodonaea spp.* actually resembles hops in any way except for their prevalence of sticky, bitter resinous compounds. Regardless, some species – particularly *D. viscosa ssp. angustifolia* [*D. angustifolia*, *D. attenuata*] – did apparently serve well for this purpose and made a decent brew [“of excellent quality” according to Joseph Maiden] (Maiden 1889).

D. viscosa has sometimes been chewed as a substitute for coca [*Erythroxylum coca*] in Peru (Greenish 1904), where it became naturalised long ago. The forms known to be naturalised in that part of the world are *D. viscosa ssp. burmanniana* and *D. viscosa ssp. angustifolia* (Harrington & Gadek 2009). I have chewed on the leaves of several of the subspecies of *D. viscosa*, which all have a similar resinous, bitter and intense taste which leaves a strange prickly burning feeling in the mouth; chewing on them for any length of time can be mildly nauseating. Some taste slightly soapy. No particular psychoactivity has been noted in my own experiments, but the local anaesthesia can be pronounced and long-lasting with some plants (pers. obs.). Others who have experimented with these plants to a greater extent claim that only some specimens of a given species/subspecies are psychoactive (<http://www.shaman-australis.com/forum/index.php?/topic/11400-dodonea-viscosa/#comment-101618>).

Melaleuca spp.; Leptospermum spp. (Myrtaceae)

Plants from these genera are known as paperbarks or tea-trees, and because of the latter name, are frequently confused with ti-trees, the unrelated *Cordyline spp.* In the early days of colonial invasion, they were amongst the plants experimented with as substitutes for tea [ie. ‘real’ tea from *Camellia sinensis*]. The most favoured of these was reputedly *M. leucadendra* (Campbell 1932). This identification might be in error as Campbell’s paper regarded early settlers in NSW, whereas this species doesn’t occur naturally until further north into Qld. Perhaps this should refer to the similar-looking *M. quinquenervia*. Captain Cook’s crew reputedly used *L. scoparium* leaves as a tea substitute (Maiden 1889).

Early white settlers in the Sydney region smoked unspecified parts of unspecified tea-trees as a tobacco substitute, or preferably, mixed with ‘real’ tobacco. It has been claimed that roots of “the common tea-tree” [which could mean a number of species], cut into cigarette-sized lengths, “make quite good cigarettes” (A.T. 1951). Any length of root would have to be porous indeed for it to be effectively smoked like a cigar.

Eucalyptus spp. (Myrtaceae)

The leaves or bark of several *Eucalyptus* species have been smoked alone, or preferably mixed with ‘real’ tobacco, as a tobacco substitute by white Australians in the past, from school children to adults. The bark of some species, such as candlebarks, may be rolled up by itself

into a cigar-shape – or preferably a piece selected that has naturally rolled tightly on the tree – and smoked. [You would want to check for spiders and their webs first!] Of the leaves [which are, of course, highly flammable], young, tender tips are preferable, with those from red gum said to be “a fine tobacco substitute”. One man perfected a blend using cured gum leaves and other unspecified ingredients, which he claimed to be better than the best commercial tobacco! In the 1920s there was even an attempt to manufacture and market cured blue gum leaf cigarettes as an alternative tobacco, and while they had their fans this never took off. One person who tried them [A.T.] reported that they “had a delightfully fresh aroma, cleared the head and gave the smoker a refreshed feeling” (Anon. 1928, 1935a, 1935b; A.T. 1951; Eureka 1941). However, cigarettes and cigars made from *Eucalyptus* leaves had been in use by white Australians even earlier, but for medicinal purposes rather than pleasure. In the late 1860s Prosper Vincent Ramel lodged patents in a number of countries, laying claim to a method he had developed to treat leaves of various *Eucalyptus* spp. or Myrtaceae in general, to manufacture a tobacco substitute that [he claimed] does “not possess the injurious properties of tobacco” and “has a beneficial and agreeable effect”. Ramel also claimed the smoke “does not contain any intoxicating vapors”. His method consisted of shade-drying the leaves, ‘bleaching’ them with hot water or steam, then drying them again and [when not completely dry] pressing them between rollers or plates to crush the leaf fibres. From there they may be made into cigars, snuffs, slabs etc. (George 2012; Ramel 1869). Later in the 19th century, the Bosisto company, who specialise in *Eucalyptus* oil products, marketed cigarettes made from *E. globulus* leaf [with or without tobacco blended in] for the purpose of asthma relief (<https://www.bosistos.com.au/content/history-eucalyptus-oil>).

After scoffing at the viability of *Eucalyptus* cigarettes for years, having been exposed to many bushfires, I recently decided to put it to the test myself. Young, tender leaves were collected in mid-summer from a species with slender, aromatic drooping leaves. These were picked free of woody stems, lightly compressed into a mass, and put in a plastic bag to sit in a dark place and sweat. This was opened and checked regularly, removing any portions affected by mould. Once the leaves had darkened, they were removed from the bag and air-dried in a cool place. When crumbled up and rolled into a cigarette, these cured leaves actually did provide a flavoursome and mild smoking experience. They burned at a leisurely pace and did not burst into a ball of flame as expected. There was also a mild high, as a bonus. It is commonly believed that koalas, which feed solely on select *Eucalyptus* specimens, look so dopey when sitting around in trees because they are stoned on gum leaves. Scientists say this is false and that this slothful lifestyle is related to their low-nutrient diet. However, no-one actually *knows* that koalas aren’t getting stoned from their diet.

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Cyberdelics: Technology to Nurture the Psyche

Melissa Warner

What are Cyberdelics?

Cyberdelics are multimedia experiences that nurture reflection on and transformation of the psyche. The word cyberdelic is derived from “cybernetic” a self-navigating system and “psychedelic” to mind-manifest. True to the name, cyberdelic technologies are designed to spark reflection on and inform the navigation of consciousness. Cyberdelics can be experienced through extended reality (XR) such as Virtual Reality (VR), Augmented Reality (AR), biofeedback and more traditional multimedia such as projectors, lighting and sound at live performance. Cyberdelics are somewhat like immersive art experiences and not unrelated to your favourite meditation app. We love art as it transports us outside our frame of reference. Cyberdelics create liminal spaces that challenge for-granted ways of being and offer opportunities for renewal and growth.



Cyberdelics involve immersive and bespoke virtual environments that encourage exploration of the psyche to develop self-mastery and intentionality in life (Warner & Smith, 2022). As tools to support personal transformation, cyberdelics synergise with the emerging wave of psychedelic-assisted therapy. So far, there are cyberdelic experiences that include VR guided reflections for daily use (Franzoni et al., 2021), retreat/gallery use (Montemayor, 2020), to support psychedelic-assisted therapy (PAT) (Enosis, 2022) and even to facilitate group altered state experiences (Glowacki et al., 2020). This essay will investigate cyberdelics as a cultural phenomena, as gamified tools for transformation and renewal, and imagining potential futures.

Both Terrence McKenna and Timothy Leary spoke of the eventual fusion between technology and psychedelics. Leary believed Cyberdelics were a way to “democratise the cyberscreen politics of the future”... and reprogram the mind (Leary et al., 1994). Leary, a polarising pioneer of the early psychedelic movement, blurred the lines between social protest, ego-inflation, and the early scientific inquiry into the potential of psychedelics as therapeutic substances. It was Leary who originally coined the phrase “turn on, tune in, drop out” but in the 80s he updated this to “turn on tune in, boot up”, in recognition of the opportunities of a more sustainable engagement with the zeitgeist of our time. McKenna’s vision of a future technology “that will help us show each other our dreams”, is becoming possible with our current technology through XR, computer generated art, and biofeedback (McKenna, 1991).

Technology for Humanity

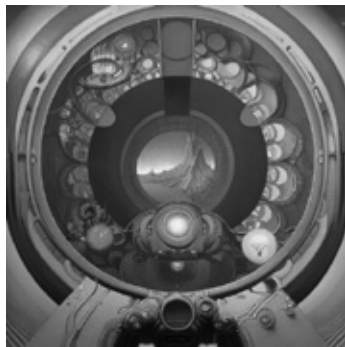
As we enter this brave new age we must not fall for what historian Leo Marx describes as “the rhetoric of the technological sublime” (Marx, 2000). Almost all advances in technology come with a shadow side. Social media keeps us connected to friends across the world and disconnects us from the dinner table. Currently scroll-bait is a leading source of information, entertainment, and dopamine entrainment (Lembke, 2021). Popular media commodifies attention, by design, to influence consumer behaviour (Harris., 2016). In a world where the ‘attention economy’ manipulates our neurochemistry primarily to maximise profit, over human wellbeing, active resistance is required.

As Aldous Huxley warned us 60 years ago, “technology was made for men and not men for technology” and technology offers a means by which we may come to “love our slavery” (Huxley, 1958). In 1932 Huxley wrote of a Brave New World in which the latest technology is used by the ruling authorities to provide the population with “non-stop distractions of the most fascinating nature”, fast-forward to today, now streaming on all our screens. Of course, it is always a matter of how to use the technology, despite inevitable misuse. Disciplines like ontological design, whose tagline “design or be designed” assumes the conscious design of human experiences will allow us to design the human with greater awareness (Willis, 2006). There is growing discussion exploring how we may sublimate technology rather than our humanity. We remain with an opportunity. Could the same tools that bind us to our screens be used to empower wellbeing?

Gamification of Wellbeing

How do we use technology to deepen our self-agency, to enhance our humanity? Cyberdelics follow the wave of meditation and psycho-education platforms as tools to enhance self-efficacy and relationality. The distinctive approach it uses to achieve these goals is through gamified, bespoke digital environments. Cyberdelics are now being created at the intersection between gaming, XR therapy, the learnings of psychedelic-assisted therapy, immersive art, and positive technology.

Games are playful experiences that entertain the player. In games individuals engage in intrinsically motivated behaviour, which depending on the game, can also provide cognitive, emotional, health and social benefit (Johnson et al, 2019). Gamification can be defined as the “use of game design elements in non-game contexts” such as in learning or at work (Deterding et al., 2011). Evidence suggests gamification can have a positive impact on health and wellbeing related interventions (Johnson et al, 2019). On a psychological level, games bring attention concepts of intrinsic motivation, the stance of being a ‘player’ of a game, rather than being at the whim of mood and habit (Husley, 2019). Gamification can empower individuals with a sense of self-agency when they return to the demands of daily life.



Several examples now exist where XR experiences are utilised to elicit behavioural change in a naturally rewarding or ‘autotelic’ way to support psychological wellbeing. XR applications

exist for the treatment of anxiety disorders (Linder et al., 2017), diabetes dietary control (Theng, 2015), the development of mindfulness (Döllinger, 2021), improving metacognition in learning disorders (Drigas et al., 2022) and psychedelic-assisted therapy integration (Enosis, 2022). The current generation has been brought up on video games and the time spent on gaming is increasing year by year (TrueList, 2022). Cyberdelics are an opportunity to utilise the accelerated learning of gamification and gaming technologies to nurture a more aware, healthy and connected future.

Cyberdelics and Psychedelics

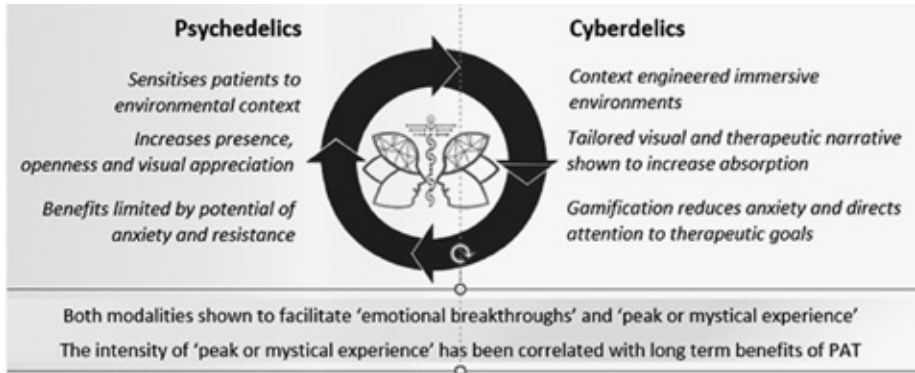


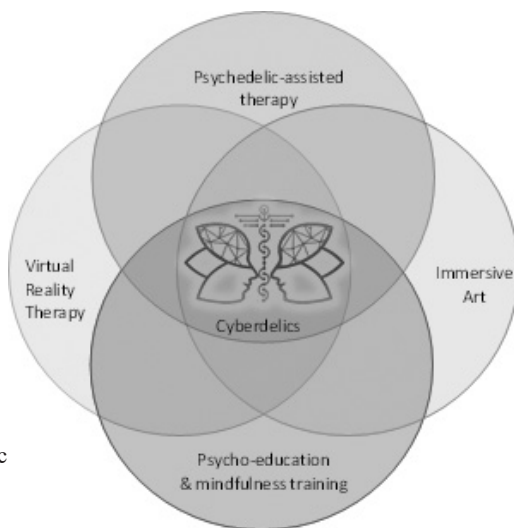
Table 1: Synergies between psychedelics and cyberdelics (Warner & Smith, 2022)

Psychedelic-assisted therapy has demonstrated efficacy to enhance wellbeing (Brouwer & Carhart-Harris, 2021), recovery from mental-illness (Nutt et al., 2020) and support creativity (Gandy et al., 2022), in conducive settings. Psychedelic experiences are transient, hyper-plastic brain states and while they do have the potential for mediating psychological transformation, belief change does not always lead to behavioural change (Carhart-Harris & Friston, 2019). Transformative experiences provide a window of opportunity for personal growth, while removed from our daily environment and habitual feeling and thinking. However, not all insights are sustained over the longer term, particularly when returning to the constraints and habits of daily life and the cultural container (Carhart-Harris et al., 2018).

Both psychedelics and virtual experiences (VE) have demonstrated capacity to elicit non-ordinary states of consciousness, such as peak experiences (Brouwer & Carhart-Harris; 2021, Glowacki, 2020). Both psychedelics and cyberdelics have the potential to immerse users in enriched sensory landscapes and both have been studied as mediums of therapeutic and transformative experience (Sekula et al., 2022). Fundamentally both psychedelics and cyberdelics in the right context can provide experiential and embodied experiences with the capacity to evoke innate transformative capacities within individuals (Aday et al, 2020).

Cyberdelic and psychedelic experiences are complementary yet distinct. The value of set and setting is well established in psychedelic assisted therapy. Cyberdelics are tailored settings with unique sensory fidelity to support mindset. Additionally, set and setting must be supported by certain skills. Cyberdelics are re-playable and offer a practice space for metacognitive skills to support the insights of psychedelic experience.

Cyberdelics can offer a chemical-free looking glass into altered states through context engineered high fidelity environments. While the depth of experience a psychedelic can offer is unique, cyberdelics also offer the opportunity of transformative experience without any chemical additives at all (Glowacki, 2020). Cyberdelic VE may provide altered state experiences to those who may not be able, or ready, to engage with psychedelic-assisted therapy (Moroz & Carhart-Harris, 2018). Cyberdelics also side step the regulatory red tape and stigma associated with psychedelic use as a transformative catalyst.



Cyberdelic Game Design Targets

Cyberdelics capitalise on multisensory engagement to optimise an environment for cultivating self-knowledge in an enjoyable way. The following exploration details some of the game design targets which may support wellbeing as well as preparation and integration of psychedelic experience.

Awe: Beauty, ambiguity, expansion

Awe describes the experience of ‘stimuli that are vast, that transcend current frames of reference, and that require new schemata to accommodate what is being perceived’ with the identification of one as a ‘small self’ in relation to something larger than oneself (Gandy et al., 2020). When something is experienced as being much larger than the self’s ordinary frame of reference this leads to a “need to accommodate”, to assimilate an experience into current mental structures (Weger & Wagermann, 2018). The need to adjust cognitive schemas to successfully assimilate a new experience is associated with an expansion of one’s frame of reference. This can result in a sense of gratitude, humility, sense of connection and perception of beauty. However, a failure to accommodate can produce confronting, terrifying and upsetting feelings (Gaggioli, 2016).

These aspects of awe reflect the fragility of the psychedelic experience, as a state of great potential but also existential risk, dependent on context and skills.

In cyberdelics, beautiful and immersive scenes can illicit feelings of awe. This can support relaxation, mindful presence and expansion, a key aspects of virtual reality psychedelic therapy (Sekula et al., 2022). These factors can create a buffer for game scenarios which illicit

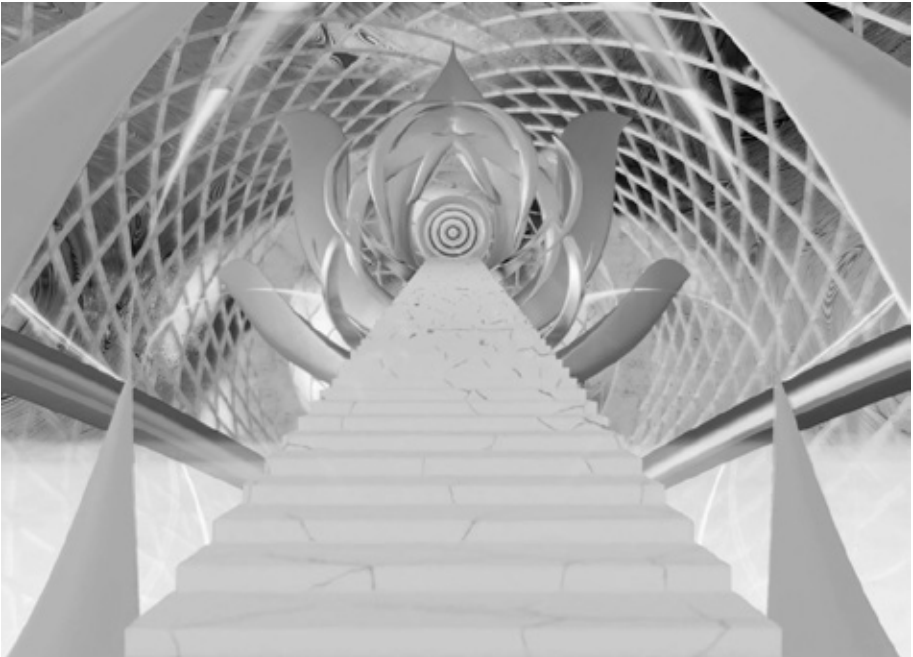


uncertainty and ambiguity. The psychedelic experience can be confronting, with increased access to previously unconscious emotions and perspectives, it can be tempting to lock onto fixed notions rather than remain open (Roseman et al, 2018).

Cyberdelic gameplay can help prepare the individual to develop greater tolerance for ambiguity and uncertainty. Tolerance for ambiguity is the degree that an individual is comfortable with experiences of uncertainty, unpredictability, change, competing demands and multiple viewpoints. It has been found that a tolerance for ambiguity is an important trait for creative capacity (Zenasni et al., 2008) and is associated with wellbeing (Hancock & Mattik, 2020). Under high-stress conditions, a greater tolerance for ambiguity supports openness both personally and interpersonally and has been shown to mitigate magical thinking, a risk in psychedelic experience (Giora, 1994). Tolerance for ambiguity is something that can be developed; mindfulness practice has been shown to improve tolerance to ambiguity (Spinelli et al., 2022).

Paradoxical situations in VR may inspire a more curious and open mindset. Firmly held beliefs about how things should be can be challenged by the violation of real-world constraints experienced in “impossible-worlds” virtually (Gaggioli, 2016). In combination with the expansive effects of awe-inspiring scenes, cyberdelics can support epistemic expansion by supporting a player to develop comfort with the ambiguity felt during new experiences.

Metacognition: Attention, mindset and self-agency



Screenshot from a virtual experience by Cyberdelics PTY LTD

Metacognition is a form of cognitive monitoring described as thinking about thinking (Flavell, 1979). Metacognition is the knowledge you have of your own cognitive processes. Metacognition is considered a critical component of successful learning, emotional regulation, and creative output (Jia, 2019). It includes the development of self-regulation and self-reflection through mindset, mindfulness and interoception (Hussain, 2015). XR can support metacognitive development through guided imagery, psycho-education, biofeedback, narrative and guided reflections.

Interoception is the perception of sensations from inside the body and includes the perception of physical sensations related to internal organ function such as heartbeat, respiration, satiety, as well as sensations related to emotions (Farb et al., 2015). It is how we distinguish whether situations or people are safe, dangerous, or life threatening. Developing greater interoceptive awareness and the ability to modulate interoceptive signals is vital for emotional regulation. VR can be used to visualise the breath and pleasant visual rewards can help reinforce mindful thoughts and behaviours. Virtual experiences can also support shifts in perspective, for example, transitioning from having a virtual body to being disembodied may facilitate experiences of ‘self transcendence’.

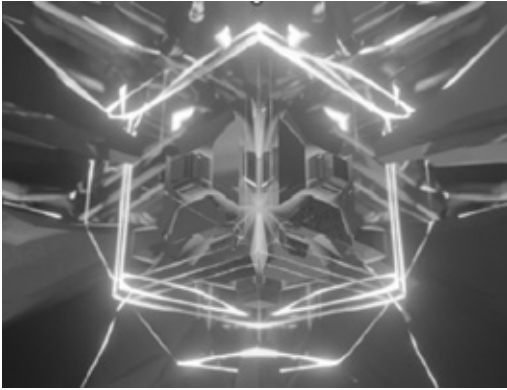
By implementing mindfulness programs in XR, instructions and guidance are provided in an immersive virtual world with minimal or modular distraction. VE has been shown to be effective in increasing multiple aspects of mindfulness (Dollinger, 2021). The modular nature of VE allows for scenarios to be tailored to the individual’s personal needs and goals. For example, the gamified practice can be focused on different mindfulness attributes such as non-reactivity, attention, and compassion.

Another key aspect of metacognition is mindset which plays a critical role on how we cope with challenges and perform creatively (Jia, 2019). A growth mindset supports an outlook towards self-efficacy and resilience. Recent research shows that brief verbal and written mindset interventions can have long lasting impacts on mental health, resilience, physiological stress-adaptivity and social connection (Crum, 2013). The incentivised and immersive learning environment of cyberdelics make them an ideal platform for mindset training. Guided narratives can lead the player to practice shifting mindsets, a useful skill during the psychedelic experience. For example, shifting from uncertainty to courage on a deep ocean dive.

Flow: eustress, presence, and play

Flow states are a state of immersion and reduced self-focus that have been shown to improve emotional regulation, accelerate learning and skill development (Csikszentmihalyi, 2013). Flow is a state poised between anxiety and boredom where there are sufficient skills to meet the demands of a situation. Flow can be described as a key facet of both the creative and therapeutic process. Flow states are described as “optimal experience” and an organisation of mind that is “strong, alert, in effortless control, unselfconscious.” Csikszentmihalyi’s theory of flow suggests that “optimal experience is thus something that we make happen”.

Flow can be cultivated by setting challenges that are sufficiently demanding without being too complex for the players abilities. Previous research has found that a key limiting factor on clinical outcomes is the degree to which a person experiences anxiety during the peak or



Screenshot from a VE by Cyberdelics PTY LTD

mystical experience (Roseman et al., 2018). It was the duration of the anxiety experienced that lowered response rate, not the frequency of anxious states. This suggests that interventions that provide skills for moving out of anxiety may increase efficacy of treatment. For example, experiences that support presence and acceptance through training shifts between self-awareness, somatic awareness, environmental awareness and open awareness may help someone “let go” during the peak states of psychedelic-assisted therapy.

Flow experiences create a “potential space” between fantasy and reality, inhabited by play, imagination, symbolism and creativity (Gaggioli, 2016). Transformative experience could be described as an emergent phenomenon of the readiness of an individual to explore the “potential space” of their identity, in a supportive environment. Through narrative play, virtual interactive experiences could be used to induce the ‘turning points’ out of which transformation arises.

Summary

Aldous Huxley once said that psychedelics “give us a recipe for gaining entrance into worlds beyond the ordinary”. The potential of cyberdelics is the same, with or without the psychedelics. Cyberdelics are technologies that may help enhance human wellbeing. Cyberdelics provide playful and educational experiences that may help individuals come to understand not only themselves but also how they want to relate to the world. Cyberdelics can also assist in developing key skills to navigate the psychedelic experience and in integrating the learnings received in the process. Through the fusion of contemplative wisdom, therapeutic process, art and technology, ‘Cyberdelics’, can induce valuable altered states and also have the potential to offer greater precision in preparing for and entraining the insights of altered state experiences. Alan Watts, the prolific Zen philosopher, makes the suggestion in his “Work as Play” that ‘playing through’ all aspects of life is the game to outwit the fear of death and make the mundane a game of artful being (Watts, 1995). Cyberdelics may nurture this innate capacity of the psyche to imagine and create a better future.

Notes:

Melissa is Co-Director of The Cyberdelic Society, a community hub for creators, artists, scientists and explorers of cyberdelic experiences. The Cyberdelic Society bring creators and explorers from across the world together to share ideas and experiences in conversation, creation and play.

All unlabelled images are renders or collages of AI generated art using Stable Diffusion by the author.

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Thebaine and Poppy Seed Poisoning: An Australian Case Study

Pixie Miller & Torsten Wiedemann

Cases of poisoning from poppy seeds have now been reported in Queensland, New South Wales, Victoria, and Western Australia. At least three patients have been admitted to intensive care units and one has gone into cardiac arrest as cases continue to rise and many more have gone unreported. There has been a range of related messaging by health departments and this messaging has not been consistent. The NSW Health notice published on November 11 came across as though only large amounts in poppy tea pose a risk. Dr Angie Bone of the Department of Health Victoria confirmed as little as 120g had caused hospitalisation and even though there have not been any cases from food consumption identified yet, they are investigating because there may be a risk with smaller quantities (Department of Health Victoria, 2022). If 120g can put a person in hospital, symptoms could appear at much lower doses. However, without presenting at a hospital, those cases would not be recorded, and the people affected are unlikely to connect it to food consumption.

Many more cases have not been officially recorded but have been discussed in several online forums and reported to harm reduction groups. Those working in the harm reduction space are hearing from people who were quite ill but didn't seek treatment. The obvious reluctance in the poppy seed tea drinking community to seek medical assistance is concerning and compounded by the public health attitude towards them, meaning only those who are critical are likely to attend hospitals. Therefore, the quantities causing harm are very much still unknown and in question. No presumptions should be stated at all as public health should take the cautious approach.

“Preliminary investigation suggests that high levels of a naturally occurring chemical in the raw poppy seeds may be a factor, which needs to be well-cooked to be destroyed” (NSW Health, 2022). This misleading messaging does not address the limited and unclear data on thebaine levels with cooking. Standard temperatures and times cannot be presumed to make seeds safe for consumption as opioid alkaloids do resist heat degradation. Shetge et al. (2020) assessed opioid content, including thebaine, in muffins as a model baked product and demonstrated the stability of opium alkaloids, with no significant reduction after baking. Due to high variability of alkaloid concentrations, many samples of thermal processing would be required to ascertain the degree it affects levels of these compounds anyway (Kleinmeier et al., 2020). It is noteworthy that seeds sold as food may be treated prior to sale (Li, Swortwood & Yu, 2021), but often are not for several reasons mostly relating to microbial contamination risks (Eisenreich et al., 2020).

Importantly, Eisenreich et al. (2020) note, that in a 2016 study in Germany, 49 samples of poppy seed-containing baked goods were tested with 12 samples having “significant amounts of thebaine (up to 2.9 mg/kg baked goods).” Additionally, it was found in 4 tested samples, that “thebaine represented the main opium alkaloid (up to 83% of the total opium alkaloid content)” (Eisenreich et al. 2020, p. 5). Opiate-rich poppy strains, specifically cultivated for the pharmaceutical industry are not recommend for food production going on these finding. Furthermore, the high risk of acute toxicity from food containing thebaine rich poppy seeds, “as estimated by EFSA was suggested to pose a potential health” (Eisenreich et al. 2020, p. 6).

Reasonable retention of thebaine in baked goods has even been utilised for distinguishing

those who have consumed moderate amounts of poppy seeds in products such as a bagel or strudel. There is no reason to presume that baking at standard temperatures and times would be sufficient to degrade the thebaine (Bollini, Banks & Hobbs, 2022). To reiterate, NSW Health could have absolutely no way of currently knowing that baked goods are safe for consumption and should not have made it appear as though there would be little to no risk by specifically emphasising it is an issue for poppy seed tea. Dangerous assumptions were clearly made by the head of NSW Poisons Information “Medical Director of the NSW Poisons Information Centre, A/Prof Darren Roberts, said consuming large quantities of this chemical in poppy seeds can be dangerous” (NSW Health, 2022).

There exist particular concerns for anyone with undiagnosed epilepsy due to the mechanism of action of thebaine, though interactions with medications or other pre-existing medical conditions could be fatal as well. There are considerable variations in the genetics relating to metabolism of opiate alkaloids which also place a subset of the population at increased risk due to slow rate of metabolism. It is but a matter of time before someone drinking poppy seed tea dies and the worst part is NSW Health failed to identify thebaine as the toxin leading some to think it was a high morphine potency batch instead. Lives are at risk because of this. Thebaine has been demonstrated to antagonise glycine and γ -aminobutyric acid (GABA) receptors, which is why it is likened in effects to that of strychnine poisoning (Eisenreich et al., 2020). Onset is rapid and can progress to life threatening complications very quickly.

There can be quite significant quantities of poppy seeds used in certain dishes and it is not uncommon for people to consume large amounts of poppy seeds in a single sitting. The European migrant community is quite accustomed to eating large amounts with some consuming up to 1g/kg BW (70-100g+) on average per day (Eisenreich et al. 2020; Zentai et al., 2012). Even Hoyts, supplier of the problematic seeds, have a recipe recommendation that

incorporates 225g into a single poppy seed roll as shown below in figure 1.



Figure 1. Image of an ‘Old world poppy seed roll’ using 225g of poppy seed (All Recipes, N.D.)

One death was recorded in Spain in 2016 due to poppy tea that contained a high quantity of thebaine, and suspected underlying epilepsy and the poppy was taken from a field (Martínez et al., 2016). Given the presentation of symptoms and the almost absent cases of thebaine toxicity to date, how has NSW Health come to treat this like it is merely due to people drinking poppy tea? With a lack of noticeable central nervous system depression, it must be obtained what the alkaloid profile is of the seeds that are contaminated. This is uncharted territory, there are no real records of similar events of poisoning

that specifically produce tachycardia, muscle spasms and convulsions. *Papaver somniferum* strains grown for food or even pharmaceutical applications that are also used as food have morphine dominant profiles (Casado-Hidalgo et al., 2021; Li et al, 2013; López et al., 2018; Stranska et al. 2013). From the clinical presentation alone, this appears to indicate thebaine is the dominant alkaloid and this is of great concern, because if that is the case it should not be permitted as a food product, requiring an immediate recall. Updating the advice given to the public should also be a priority, especially since 120g in poppy tea would not normally put a person in hospital either. The rationale behind the messaging is highly questionable given the context as this is clearly outside the realms of past poisoning incidence which related to morphine overdose and were never widespread events in Australia.

There are misleading statements or outright errors now circulating in the media. It is likely the use of ‘naturally occurring substance’ has contributed in part to this, especially without adequate context or even the mention of thebaine as the toxin in the NSW Health notice. One outlet referred to a fruit drink, another as thebaine being the alkaloid sought after which it is not, while another left the impression it was simply high morphine content. Because many were left to think it was a high morphine content in the current seed stocks of concern, not thebaine, there are many comments through social media platforms that suggest many people are buying these potentially harmful seeds thinking they are particularly potent.

The data available on thebaine is limited but due to increasing production, it is presenting increasing concerns for high thebaine content seeds to enter the food supply (López et al, 2018). Samples in the last few years show huge variability in thebaine content and the lack of regulations around limits for most countries means it has not been adequately managed or addressed (Eisenreich et al., 2020). High thebaine content is a risk identified for food consumption, having a far lower quantity required than morphine to cause toxicity, yet much of the regulations throughout the world are based on morphine content. *Papaver bracteatum* is not grown for food stocks, solely for the pharmaceutical industry. High thebaine in *Papaver somniferum* is not exactly ‘naturally occurring’. A mutation was identified, and seeds selected with it to create strains of high thebaine *Papaver somniferum* for pharmaceutical applications. *Papaver somniferum* x *P. bracteatum* hybrids have also been purposely created. The gene that converts thebaine to morphine (with codeine as an intermediary) is lacking in these purposely created strains. *Papaver bracteatum* and *Papaver somniferum* x *P. bracteatum* seeds cannot be sold for consumption under the Food Standards Australia New Zealand Act 1991 (Cth), being listed in the Australia New Zealand Food Standards Code – Schedule 23 – Prohibited plants and fungi.

There is potential for *Papaver somniferum* to vary in alkaloid production and strains grown for both pharmaceutical and seed stock could be compromised in a few ways. The harvesting and processing of the seeds can lead to variable amounts of the latex on the seeds, and this usually is not washed due to the risk of microbial growth via introduction of moisture. Growing conditions change the alkaloid levels and due to increased production of high thebaine crops, cross pollination could also potentially lead to seeds that produce higher levels of thebaine. Hoyts have been identified as a source and they use imported seeds, though other brands have been implicated in public discourse. Australia is the largest producer of thebaine, followed by Spain and then France. Samples need to be analysed immediately to identify if the seeds are of *Papaver somniferum* or *Papaver bracteatum* source and establish how the high thebaine seeds came to be sold as food.

Regarding the mechanism of action, Eisenreich et al. (2020, p. 4) show “thebaine exhibited antagonistic effects on glycine and γ -aminobutyric acid (GABA) receptors in membranes isolated from rat spinal cord and brain stem, which were much higher than those of morphine. The inhibitory potential was determined as concentration of an inhibitor (e.g. thebaine) which

led to a 50% reduction of receptor activity (IC₅₀). For thebaine, the authors found an IC₅₀ of 1.0 μM for glycine receptors (in relation to strychnine) and an IC₅₀ of 300 μM for GABA receptors (in relation to GABA)". It is important to note that thebaine while being an opioid alkaloid does not target an opioid receptor as the primary mechanism of action and naloxone will not help. Unlike morphine, thebaine has practically no affinity for μ opioid receptor binding and little activity at other opioid receptors (Eisenreich et al., 2020). While poppy tea consumers would be familiar with morphine overdose symptoms, they are less likely to be familiar with thebaine toxicity and it is critical to identify the toxin in the public health warning.

The data on thebaine is lacking in general which means even more caution must be taken as indicated by Eisenreich et al. (2020, p. 2), "Regarding thebaine, EFSA concluded that no quantitative risk characterization could be carried out for this compound, due to the lack of adequate data". Eisenreich et al. (2020, p. 2) add that "Information regarding the toxicokinetic of thebaine is sparse. There are no relevant data on oral bioavailability". Eisenreich et al. (2020, p. 4) continue with "Literature regarding the impact of thebaine on human health is sparse. Thebaine is not used therapeutically. It can, however, be present in poppy seeds, which may also originate from plants bred for pharmaceutical purposes (EFSA (European Food Safety Authority), 2018)." Also, Eisenreich et al. (2020, p. 3) state, "The quantity of available appropriate scientific literature regarding the hazard potential of thebaine is rather limited". Indeed, it is quite challenging to get information on the effects of thebaine in humans, though we appear to be in the middle of a growing uncontrolled exposure event.

Along with the additional concern of Eisenreich et al. (2020, p. 3) "Compared to controls, thebaine induced maternal mortality in the two highest dose groups (10% in 140 mg/kg bw group; 75% in 193 mg/kg bw group). Fetal viability was not affected by thebaine. However, application of high thebaine doses led to increased occurrence of fetal malformations (2.0% in 140 mg/kg bw group; 4.2% in 193 mg/kg bw group), compared to control animals. The most abundant fetal abnormality was cranioschisis, a cranial closure disorder. Other lesions were - amongst others - anophthalmia (the absence of one or both eyes), myelocoele (a bulging of the spinal cord) and external liver." Animal studies suggest thebaine has teratogenic potential. Cytotoxicity is also noted by Eisenreich et al. (2020, p. 4) "In 2002, Kawase et al. found treatment with thebaine to induce cytotoxic effects in human oral tumor cells (HSC-2) in a concentration independent manner (Kawase et al., 2002)." Again, this means additional concern for prolonged exposure and high dose exposure.

As mentioned through health care teams, there is limited clinical information for treating thebaine toxicity. However, based on the presentation of symptoms and the mechanism of action, diazepam (or a similar benzodiazepine) can be administered orally or intravenously if toxicity is severe with active convulsions. An anticonvulsant such as valproic acid should also be considered. Then any other supportive care to manage symptoms as needed. Beta blockers may be useful for managing tachycardia and hypertension, which additionally increase the effectiveness of valproic acid in preventing convulsions. Monitoring for high body temperature with excessive muscle contractions, which increase metabolic processes and lead to rhabdomyolysis causing acute kidney injury. Diabetic patients or those with pre-existing kidney disease are particularly at risk in this regard as well.

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'Betel nut'
Areca catechu
(Arecoline)

Thanks Mulga

Keeper Trout

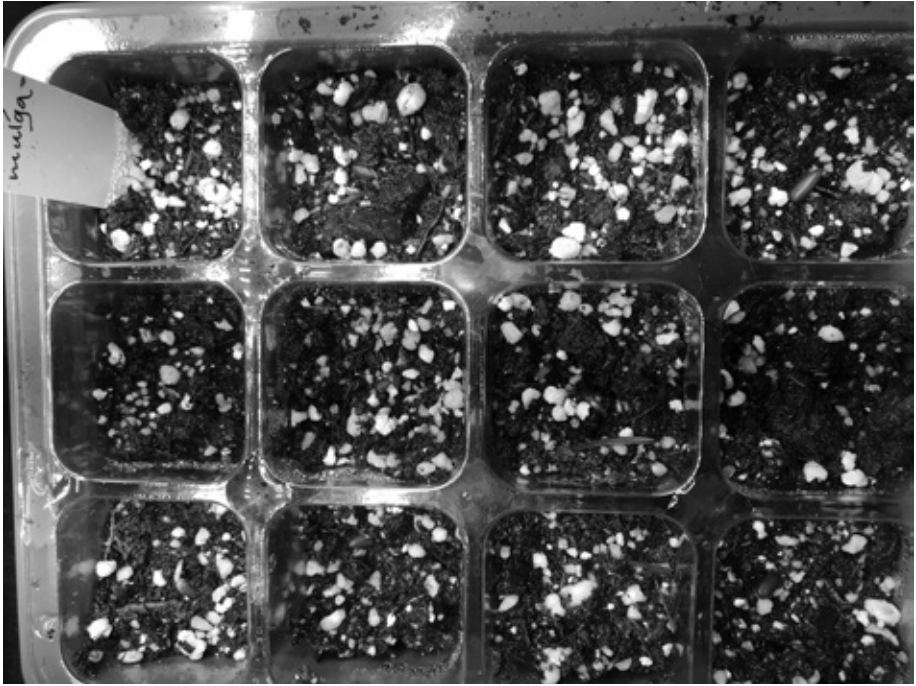
Among the interesting discoveries in Sasha's archives was a letter sent to him by my friend Mulga. It included *Acacia obtusifolia* seeds harvested in NSW during November 1996. I obtained permission to plant some of them. Due to their age, I felt that it was worth taking extra measures to help germination, so a heating mat, humidity enclosures, and a high intensity LED plant light were used.

Around forty years earlier, I had read in Watt & Breyer-Brandwijk (1962) that concentrated sulfuric acid could be helpful with hard-shelled *Acacia* seeds but had been hesitant to try such extreme measures. As there was already some sulfuric acid drain cleaner on hand (Clobber brand), a dozen seeds were soaked in it for 1 hour, rinsed in fresh water, and planted. Starting five days later, the seeds began germinating, and 8 of them soon came up. Another two got weak starts in the days that followed and have continued to lag behind the others. The compact branching of the seedlings may be the result of the intense lighting.

Don't give up on planting old *Acacia* seeds.

























Entheogenesis Australis Psychedelic Symposium 2022
Speaker Biographies and Synopses
 [Alphabetical order by surname]

Lectures

Jef Baker

Mapping entheogenesis through the ecological-self

Evolving from my 2015 Honours thesis examining the overlaps, intersections, and parallels between the philosophy of Deep Ecology and the Ayahuasca experience, this presentation explores the concept of 'the ecological self' as a key aspect of entheogenic awakening.

The ecological self is a concept developed by deep ecologists such as Freya Mathews, Arne Naess, John Seed, and others, which proposes that ecological ideas are insufficient to bring about change and that a 'wider-identification' or 'ecosophical' worldview is required to recognise the intrinsic interconnection of all life. The ecological self describes a 'mode of being' able to perceive and experience all living things as inseparable from our individual and collective embodiment and encourages us to explore our affinities with other beings as part of our own humanity. As psychedelic compounds/entheogenic plants are known to reliably induce this expanded sense of self, this commonly experienced disruption of fixed identity gives us an opportunity to critique culturally constructed norms of anthropocentrism by challenging our assumed boundaries of separation. Exploring the ecological self through psychedelics presents a way of mapping this particular path toward entheogenesis by highlighting the significance of experiential methods that present a view of our existence as relational and holistic. Entheogenic experiences of an ecological Self, therefore, implicate a way in which we are able to identify with the broader non-human biotic community by seeing beyond the present into the 'deep time' of evolution in order to consider the real roots of consciousness and our role on this planet.

Bio: Jef Baker heads the Sydney chapter of The Australian Psychedelic Society, is global moderator at The 5-Hive forum and is an active admin of several psychedelic-related Facebook pages including his own group, Entheogenic Anthropology. Jef's long-standing fascination with psychoactive plants led him to complete his Bachelor of Arts w/ Honours in Cultural Studies and Communications in 2015 with an analysis of the deep ecological themes of ayahuasca discourse. Jef is also passionate about Acacia species and cultivates a variety of ethnobotanical plants

Dr Sam Banister

Psychedelics 2.0 and beyond

In the past decade, there has been an explosion of research focused on the medicinal chemistry of psychedelics. Dozens of companies around the world are developing entirely new psychedelic medicines for the treatment of serious mental health disorders.

Modern psychedelic drug development utilises the most cutting-edge scientific technologies and is illuminated by insights from psychedelic-receptor interactions obtained at an unprecedented level of detail using cryogenic electron microscopy and molecular modelling.

The presentation will describe the rational development of entirely new classes of psychedelic drugs being employed by leading academic laboratories and private companies and what these new medicines will mean for the most desperate patients.

Bio: Sam is the CSO of Psylo; a biotech start-up focused on the development of next-generation psychedelic medicines. Sam has been developing new therapeutics in the fields of neuropsychiatry and neurology for more than 15 years at leading academic institutions (Stanford University, University of Sydney, UNSW) and biotech start-ups (Tranquix Therapeutics, NaluBio). Prior to founding Psylo, he was Team Leader in Medicinal Chemistry at The Lambert Initiative for Cannabinoid Therapeutics, and was a postdoc at Stanford University studying cannabinoids, psychedelics and new psychoactive substances (NPS) before that.

Sam's work on the chemistry and pharmacology of new psychoactive substances (sometimes called "research chemicals") has been covered by major newspapers (New York Times, Sydney Morning Herald) and national radio programs (NPR).

Sam is an enthusiastic science communicator, appearing as a guest on numerous science podcasts, and regularly presents at community science events such as Pint of Science, National Science Week, Vivid and The Science Tent at Splendour in the Grass.

Website: www.psylo.bio

Dr Stephen Bright

MDMA research down under: What does a decade of persistence look like?

In 2010, Rick Doblin from MAPS was a keynote speaker at the EGA Conference and presented impressive data from their first Phase 2 clinical trial of MDMA-assisted psychotherapy for PTSD. A workshop for researchers interested in psychedelic science was held after EGA, where Rick convinced attendees that Australia could make a contribution to global MDMA research and pledged funding for an Australian MDMA study. Directly following that meeting, Psychedelic Science in Research and Medicine (PRISM) was formed.

PRISM's journey to establish clinical trials of MDMA-assisted psychotherapy in Australia has been challenging. Our first effort to replicate MAPS' research was rejected by an ethics committee in 2012. This highlighted to us the differences in conducting research within the Australian healthcare system versus the US healthcare system. Our second bid in 2015 was vetoed due to stigma and university conservatism. Then in 2018, Edith Cowan University supported me in leading a small trial of MDMA-assisted psychotherapy. Despite this institutional support, the road to starting recruitment for this trial has been slow.

This presentation will describe the obstacles PRISM has overcome and the support we have received from MAPS and others. A decade of persistence has resulted in PRISM Ltd becoming the Australian leaders in MDMA research. In doing so, we hope to create a smoother pathway to MDMA clinical trials for other Australian researchers.

Bio: Dr Stephen Bright has worked as a psychologist within the Mental Health and Alcohol and Other Drugs (AOD) field for the past 20 years. He is currently Senior Lecturer of Drug Studies at Edith Cowan University. In addition to psychedelic science, Stephen conducts research into media reporting of AOD-related issues (as seen in the Daily Telegraph), emerging drug trends and harm reduction. He is an advocate for an evidence-based approach to AOD legislation and has provided oral evidence to parliamentary and coronial inquests.

Stephen is also a co-founder of Psychedelic Research in Science and Medicine (PRISM), an Australian non-profit research association that develops, initiates, coordinates and supports formal research into mainstream medical applications of psychoactive compounds, known as psychedelics.

Website: www.aodmediawatch.com.au

Anna Conrick

Bill Richard's Living Room: How are we designing psychedelic clinical spaces?

The "living room" has long been considered the optimal spatial configuration to contain therapeutic psychedelic experiences. Recognised for its ability to elicit feelings of comfort and safety and positioned in diametric opposition to notions of the clinical, it is now possible to find these uncanny relics of domesticity nested within the envelope of psychedelic research and treatment facilities the world over.

Where did the spatial trope of the living room come from, and what can we learn from it? Does this configuration represent the apogee of setting affordances in therapeutic protocols, or should we be rethinking the way we situate these experiences?

These questions and more form the backbone of a discussion around the role of space and spatial design practice in the emerging field of psychedelic therapies.

Bio: Anna Conrick is a practicing spatial designer and design educator at Monash University, Melbourne. She is currently undertaking doctoral research at Monash Art Design and Architecture. Her thesis is entitled *Affinities and Atmospheres: Using Design to Rethink Set and Setting in Psychedelic Therapie*. Anna's work explores spatial setting as a lively and designable encounter.

Anna studied Anthropology at La Trobe University in Melbourne, and Interior Design at RMIT (Melb) and Parsons/The New School in New York. With a practice background in both architectural design and fabrication (ceramics and lighting), Anna's professional experience frames an ongoing research interest in vibrant matter and material agency which lends a particularly sensory focus to her work.

Anya Ermakova

5-MeO-DMT containing plants: fact and fiction

In this talk I will examine several plants containing 5-MeO-DMT and talk about their botany, cultural uses and history. I will draw on archaeological records, ethnobotanical work and recent biochemical analysis to shift the focus from the Sonoran Desert toad to a variety of entheogenic plants, for example from *Anadenanthera*, *Virola*, *Phalaris* genera, as well as other plants and even fungi.

Bio: Anya has a motley background and varied research interests in nature conservation, ethnobotany, neuroscience and psychiatry, interweaving and connecting these diverse paths through psychedelic science.

Anya worked at the forefront of psychedelic research as a science officer at the Beckley Foundation and has provided psychedelic welfare and harm reduction services with PsycareUK and Zendo.

A deep love for nature and wildlife has motivated Anya to study biology at the University of Edinburgh, while a quest to understand altered states of consciousness has prompted her to specialise in neuroscience and later continued during her PhD in psychiatry at Cambridge, where she investigated the origins of psychosis. She then worked for the NHS, developing and trialling a new psychosocial intervention for psychosis.

After a brief stint as a clinical trial manager, she decided to pursue her passion for nature, by studying Conservation Science at Imperial College London. She is currently working as a research consultant in London but stays involved in peyote conservation work in the USA. She is a part of Chacruna's Council for the Protection of Sacred Plants and a board member of the Cactus Conservation Institute.

Rachel Gagen

A Prescription of NeuroGnostics: Entheogenic Herbalism

We are going to explore psychotropic herbalism, organic biological organisms used as a medicine that have an affinity for the mind. In particular, herbs that have an affinity for the parts of the mind that govern our interpretation of information from the external world and in response, adapt our inner world. Medicines that regulate the ego open our sensory gating channels, widen, and refine our perception of the mind and the Mind at large. Entheogens are essentially a class of herbs that generate a direct experience of connectivity to the vital force of life. They work upon the body in a targeted way, and like any herbal action, they have specific indications. We're going to explore where these herbs fit into the apothecary and how to prescribe an entheogen from a traditional herbal perspective.

Bio: "I have come to understand herbal medicine as a part of mankind's placement and movement across the land. Not just a remedy; a complex relationship that weaves us into the Earth's soil. That we are by extension an enfooted plant and an embodied microbe. Likewise a plant, an Earthed human."

Rachel Gagen is a Western Herbal Medicine therapist, facilitator of rites of passage, forager, medicine maker, traditional body worker and musician. Co-founder of Mulai Lagi Iboga, an addiction interruption and psychospiritual retreat service in Australasia utilising Eboka for initiation purposes, she works with matters of healing and sickness, utilising relationship and herbal medicine as a mechanism of reconnection with the Self.

She has been initiated into the Bwiti sect Mabanji, a living and growing feminine Gabonese tradition that utilises Iboga as a sacrament of transition and embodiment teacher. Her interest in ethnobotany has led her to pockets of Indigenous cultures across the globe to learn from their relationships with plants, including their use of specific styles of music for enhanced communication and integration whilst in shamanic spaces. She works from the Sunshine Coast, Australia, as a health

practitioner, teacher and musician. She has studied Western Herbal Medicine and traditional body work, and runs the online plant medicine platform EntheoBotanica, as well as being the creator of the herbalist conference Rebel Herbal.

Website: www.entheobotanica.org

Simon Green

**The problems of the throwing out of babies with bathwaters:
Whose paradigms are we really shifting?**

For at least 25 years, I have worked in the Healing Arts, and for 20 deeply engaged with the “entheogenic” plant centred systems of Curanderismo of Latin America. I’ve also engaged with, befriended, and worked alongside healers from the world’s oldest continuous cultures here on my home continent.

I’ve witnessed time and time again the spiritual root of illnesses at both an individual and cultural level and the profundity of healing potential afforded in the recognition of and mediation between the unconscious and the conscious, the human and non-human worlds.

Despite the world’s affirmations to me, over decades, of the veracity and authenticity of my observations and cosmovision, I have no definitive model, no ten commandments to fix the profound unwellnesses of our time. What I have is story and action, and I’d like to share tales of that landscape to inspire change within the ontological structures writ large in (and profoundly bugging up) physical, social and geographical bodies.

A shift is profoundly needed, which cannot be mind based alone; in fact, our shift of understanding of our mind and it’s place within our ecosphere is fundamental to healing. This is something that traditional healing structures have known, in the words of a now departed friend, “from ever since.” So, in his honour and in recognition of the countless human and non-human wisdoms and experiences which inform and support any “new” discoveries in the realm of art, science, and culture, let me share some stories from the fire.

Bio: Simon Green is a Huachumero and Curandero who has worked for the past two decades in service to a broad community, curing individuals and groups. He works in his daily practice with clients from around the world salving a wide range of ills, and has more specifically spent considerable time working in the amelioration of the deleterious impacts of drug addiction in the Peruvian Amazon.

Simon was a member of the original steering/advisory committee of and remains a Research Associate with the Ayahuasca Treatment Outcome Project and currently sits on the International Advisory Committee for From Research to Reality (R2R): Global Summit on Psychedelic Assisted Therapies and Medicine. He has presented at a range of events including Beyond Psychedelics, Prague 2016 and Psicohabana, La Habana 2018. He collaborated with ANTAC to facilitate Anangu Ngangkari representation at the 2015 Encuentro Intercontinental de Lideres Indigenous Sobre Adiccion y Cultura, Tarapoto, Peru. Simon has also produced a number of features for ABC Radio National on the subject of curing including “Icaros; Magical Songs from Peru”, “This Song is from Ever Since: Songs for Wagilak Country” and “The Doctor Man’s Lair”.

Simon is a fourth-generation Riverine Farmer and has spent a great deal of time herding sheep on the hot, dry and dusty Australian plains. He currently prefers a more tropical climate and keeps way too many bees in his backyard.

Meredith Hartley

A New Trip: towards a path of representation, inclusion and safety in the psychedelic movement

Psychedelics have moved to the forefront of global mainstream consciousness, and research continues to show their efficacy and promise in treating trauma, depression, anxiety, and a variety of other conditions. However, despite this focus and excitement, psychedelic research – and the movement more broadly – has a long history of excluding marginalised communities and dismissing instances of sexual abuse and coercion. Black and non-White communities have been historically over-policed and heavily incarcerated for possession or sales of some of these substances, and psychedelic therapy is likely to remain out of reach for these communities and those who experience socioeconomic disadvantage.

This presentation aims to unpack the issues of abuse, lack of safety, and continued exclusion for marginalised communities within the psychedelic movement in Australia and, more broadly, as well as highlighting the steps we all need to take to ensure equal representation, inclusion, and cultural safety.

Bio: Meredith Hartley (she/her) is a musician, vocalist, music therapist, psychotherapist, and community engagement facilitator currently residing on the ancestral and unceded territory of the Coast Salish peoples – Squamish, Tsleil-Waututh, and Musqueam Nations (Vancouver, Canada). She has extensive experience working in early childhood, disability, community health, Alcohol and Other Drugs (AOD), and mental health sectors. Meredith works with a holistic approach to address the needs of her clients, and special interests include LGBTQIA+ issues, relationships, psychedelic integration, spirituality, and transpersonal work. She received her Master of Music Therapy and Graduate Diploma in Guided Imagery and Music Therapy (GIM) from the University of Melbourne and a Bachelor of Music from the University of Adelaide.

Meredith began volunteering for Australian Psychedelic Society in mid-2018 and shortly afterward started co-facilitating integration circles. This led to a position on the committee in 2019 and taking over as President in 2020, leading the committee to develop a strategic plan in early 2021.

Meredith is passionate about intersectionality, ethics and safety within psychedelic spaces and is keen to further this work within a Canadian context.

Renee Harvey

Psychedelic-Assisted Psychotherapy for more complex presentations: expanding our models

Psychedelic-assisted psychotherapy research is being expanded to examine its effectiveness for people with a variety of diagnostic presentations. Is there a one-size-fits-all model, or do we need to consider expanding our models? This may be going against a trend to find forms of treatment that are brief and simpler in application. The presentation considers whether we may learn something from instances where our applications of psychedelic medicines in research settings have not been helpful. This may also have relevance for our models of training for therapists working in this field.

Bio: Renee Harvey is a highly experienced clinical psychologist who relocated from the UK to Australia to develop training in psychedelic-assisted psychotherapy (PAP). She has many years of experience as a lecturer, trainer, clinician and service developer within the mental health field. Her ideas on PAP training are featured in a recently published book chapter (Harvey, 2021) and in various talks and podcasts.

Prior to relocation, Renee was an Honorary Research Fellow and assistant guide in the Imperial College London trial researching psilocybin for treatment-resistant depression. She also facilitated the development of psychedelic interest groups and established and ran a psychedelic Integration Circle in Brighton.

Renee is currently assisting as a therapist on the psilocybin trials at St Vincent's Hospital, Melbourne, aimed at the alleviation of depression and anxiety associated with life-threatening illness. She is also on the Clinical Advisory Board of Reset Mind Sciences, providing therapist training for their psychedelic research program. She also has a private practice in Melbourne with an emphasis on providing psychedelic integration.

David Holmgren

Permaculture: Stories celebrating floristic and fungal abundance

David Holmgren draws on a lifelong passion for ethnobotanical knowledge and practise to tell stories that celebrate abundance and diversity, pushing the boundaries of social and, at times, legal norms. These true stories cut paths through the psychosocial wilderness towards a relocalised ethnobotany of the everyday to sustain us in the shadow of failing techno industrial civilisation.

Bio: David Holmgren is the co-originator of the permaculture concept following publication of Permaculture One, co-authored with Bill Mollison in 1978. David is globally recognised as a leading ecological thinker, teacher, writer and speaker promoting permaculture as a realistic, attractive and powerful alternative to dependent consumerism. Other key publications include Permaculture: Principles and Pathways Beyond Sustainability (2002) and Future Scenarios: How Communities Can Adapt To Peak Oil and Climate Change (2009) and most recently, RetroSuburbia: The Downshifter's Guide to a Resilient Future (2018).

Website: www.holmgren.com.au

Janet Laurence

The alchemical life

Working with the potency of an alchemical language to explore plants enables me to imagine their dreams and desires. A series of collected images of artworks that reference the lives of plants forms this presentation. This embodies the possibility of transformation and a fabricated realm that is based on research as well as imaginings. Do plants dream of their attractions to certain sounds and sensations that are offered by other plants, insects, birds, and animals, including humans? While it's broadly acknowledged that plants sleep and wake according to temperature, moisture, and light cycles, my work cultivates a vision beyond this, into their alchemical afterlife. My thoughts spring to Barcelona's Liceu Opera, which opened for its first post-pandemic concert to an audience of plants, who moved and trembled with the music. Like my work, this is not simply humans projecting anthropomorphic qualities onto plants but a testament to the idea that our emotions our sensations, our lives, are interwoven into the breath of plants.

Website: www.janetlaurence.com

Dr Chris Letheby

Philosophical issues in psychedelic research: A review of emerging themes

Serotonergic (or "classic") psychedelics have struck many researchers as raising significant philosophical questions that, until recently, were largely unexplored by academic philosophers. In this talk, based on collaborative work with Jaipreet Mattu (University of Western Ontario), I will give an overview of four emerging lines of research at the intersection of academic philosophy and psychedelic science: selfless consciousness, psychedelic epistemology, psychedelic ethics, and spiritual/religious naturalism. In the past decade, philosophers have debated issues concerning: (i) psychedelics and self-consciousness; (ii) the epistemic profile of the psychedelic experience; (iii) the ethics of psychedelics use; and (iv) whether spiritual or religious dimensions of psychedelic use are compatible with a naturalistic worldview.

Bio: Dr Chris Letheby is a Lecturer in Philosophy at The University of Western Australia (UWA). His areas of specialization are philosophy of mind, philosophy of cognitive science, and philosophy of neuroscience. His research to date has focused mainly on the use of classic psychedelic drugs in neuroscience and psychiatry. In several articles and a book, Letheby has argued that a traditional conception of psychedelics as agents of insight and spirituality can be reconciled with naturalism, the philosophical position that the natural world is all there is. His monograph *Philosophy of Psychedelics* was published in 2021 by Oxford University Press.

Website: www.chrisletheby.com

Dr David Luke

DMT: Indigenous gateway to the soul and endogenous reality thermostat?

N,N-dimethyltryptamine (DMT), dubbed the 'spirit molecule,' is an extremely potent short acting psychedelic substance found endogenously in the human organism and occurring widely (possibly ubiquitously in many kingdoms) in nature, and has been theorised to account for numerous spontaneous exceptional experiences such as those occurring near or at death. The traditional indigenous use of DMT in the Amazonian visionary decoction, ayahuasca, known as the 'vine of the dead,' has a long history of shamanic use to transcend time and space and communicate with the 'spirits' of nature. Most people experiencing a breakthrough dose of DMT report encounters with seemingly sentient, intelligent and independent entities, which typically convey a convincing sense of their reality, such that a recent survey found that of those having such encounters who reported being atheist before their experience, more than half reported that they were no longer atheist afterward. This talk explores the speaker's recent DMT field research experiments at the intersection between the scientific, therapeutic, psychonautic, and shamanic exploration of the DMT realm and attempts to fuse these disparate and yet overlapping cosmologies.

Bio: Dr David Luke is Associate Professor of Psychology at the University of Greenwich, UK, where he has been teaching an undergraduate course on the Psychology of Exceptional Human Experience since 2009, and he is also Honorary Senior Lecturer at the Centre for Psychedelic Research, Imperial College London, and Lecturer on the MSc Consciousness, Spirituality and Transpersonal Psychology for Alef Trust and Liverpool John Moores University.

His research focuses on transpersonal experiences, anomalous phenomena and altered states of consciousness, especially via psychedelics, having published more than 100 academic papers in this area, including thirteen books, such as *Otherworlds: Psychedelics and Exceptional Human Experience* (2nd ed., 2019). When he is not running clinical drug trials with LSD, conducting DMT field experiments or observing apparent weather control with Mexican shamans he directs the Ecology, Cosmos and Consciousness salon at the Institute of Ecotechnics, London, and is a cofounder and trustee of *Breaking Convention: International Conference on Psychedelic Consciousness*.

He has given over 400 invited public lectures and conference presentations; won teaching, research and writing awards; organised numerous festivals, conferences, symposia, seminars, retreats, expeditions, pagan cabarets and pilgrimages; and has studied techniques of consciousness alteration from South America to India, from the perspective of scientists, shamans and Shivaitees. He lives life on the edge, of Sussex, UK.

Lila Lieberman

Preparing the Vessel

As we go through rites of passage, initiations, plant medicine inductions, we are strengthening our capacity and crafting the vessel of our being. In this way, we are capable of holding finer and finer nectar. Vision, wisdom, resilience, power all has a home in which to reside. Every culture has, somewhere in its lineage, rites of

passage and traditions that induct the individual into broader capacities that teach us how to hold the sacrament we imbibe. These are not only physical but energetic, and allow agility to navigate between worlds.

Arriving in these incredible, powerful, unnerving times without these traditional strongholds of initiation in place, how can we prepare ourselves to bring in the vision of our highest inspiration, be able to hold it, and see it through? What do we have available to prepare the ground of our being to foster this? How do we tend the soil of our minds and hearts, so it effortlessly yields amazing fruit of actualisation?

What are the ways to activate the deepest, wildest technology of what it is to be human and have ourselves resilient enough to contain it? We have within us an apothecary of potential, sophisticated through timeless evolution. How do we call forward the core of our being, ripe for our full potential?

Bio: Lila has been working with medicinal plants and indigenous methodologies of healing for twenty-five years. She began her journey in the Atacama Desert of Peru and later initiated as sangoma - traditional healer and seer - in the Shona tradition of South Africa, where she was born. She has spent many years engaging cultural wisdom and plants in a medicinal capacity, both academically and culturally. Her focus is on the living library held within the plant and human kingdoms, and how their collaboration activates profound capacities for new perception and creative psychological feedback. She explores the various cultural ways, rites and ceremonies that open these channels of learning.

Her academic background is in Anthropology, Linguistics, Philosophy and Transpersonal Psychology, and she holds a diploma in Integral Coaching. She now lives in Byron Bay, Australia.

Her current work is a systemic body of knowledge she received directly through the plant kingdom and dreams after completing her initiation. It addresses the universal allocations of medicine in all-natural bodies and the "Five Pillars of Medicine" that follow specific timeless principles of evolution. Her talks and workshops facilitate the practical application of this wisdom. She currently runs several workshops on plant medicine, plant communication, ancestral connection and is writing her book "The Five Pillars of Medicine".

Dr Alistair McTaggart

Sex and psilocybin genes in magic mushrooms

Most magic mushrooms are species of *Psilocybe*, which nearly all share a cluster of genes that metabolise tryptophan into psilocybin. Two species are widespread in Australia, *Psilocybe cubensis* (cubes), and *P. subaeruginosa* (subs). Cubes are likely naturalised in Australia, and its centre of origin is unknown. It is the stalwart species cultivated by recreational growers, who have potentially impacted its genetics by propagating from limited founding genetic diversity and inbreeding over time. The Oregon Psilocybin Advisory Board recommended that cubes should be the sole taxon grown to produce psilocybin commercially. Subs are native to Australia but are not a commercial option, as, in a low percentage of mushrooms, a compound is produced that temporarily paralyses users. This talk will cover how Australian cubes differ from commercially cultivated strains and how knowledge of genetics may be used to select for subs that do not cause paralysis.

Bio: Dr Alistair McTaggart is a research fellow for the Centre of Horticultural Science (QAAFI), University of Queensland. He studies the evolution of fungal pathogens, with a focus on rust and smut fungi. He has completed postdocs in Africa, America, and Europe. Alistair has started a new research direction for UQ, studying the biodiversity of native psychoactive mushrooms in Australia. This research will determine whether Australian magic mushrooms have evolved unique genetic pathways for the production of psilocybin and confirm the endemicity of our native taxa. Alistair will establish a living collection to safeguard genetic diversity and provide a platform to research the applications of psilocybin for human health.

Website: www.alistairmctaggart.weebly.com/magicmushrooms

David Nickles

Whose Stories Are We Telling: Ethnobotanical Understandings in the Corporadelic Era

Storytelling has played a central role in the creation and transmission of ethnobotanical knowledge throughout time. Entheogenic plants have rich histories of social, cultural, and medicinal applications and have tended to feature prominently in the cosmologies, pharmacopeias, and epics of the cultures (and subcultures) that have used them. However, these stories are not static. As psychedelics go mainstream, pharmaceutical executives, financial speculators, and even psychedelic researchers are crafting ethnobotanical narratives to propagate the perspectives they wish to see in the world.

As these narratives compete for dominance in the “marketplace of ideas,” it’s up to members of psychedelic communities to develop, maintain, and disseminate evidence-based ethnobotanical frameworks that enable us to “distinguish shit from shinola.” If our realities are constructed from the stories we tell, how significant are the stories we tell about plants that alter our realities? This talk will examine the implications of some historical and current ethnobotanical narratives in order to examine the broader sociocultural significance of some psychoactive plants and the stories we tell about them.

Bio: David Nickles is an underground researcher and harm reduction advocate who serves as an editor for Psymposia Media, co-host of the Plus Three podcast, and intermittent moderator of the DMT-Nexus community.

David has presented social critiques and commentary on psychedelic culture and radical politics, as well as novel phytochemical data, at venues around the world. His work focuses on the social and cultural implications of psychoactive substances, utilising critical theory and structural analysis to examine the intersections of drugs and society. He is a vocal opponent of psychedelic commodification and blows glass in an idealistic attempt to avoid monetising his psychedelic work.

Website: www.psymposia.com/

Mark Pesce Drilling Down

What does nitrous oxide, delivered in an Endodontist's chair in Chatswood, have to do with the interdependent co-arising of form, perception, and reality? The great web of causality - Indra's Net - presents us with the consequences of our actions and the actions of those who preceded us - giving us the unasked-for and unwanted gift of karma, the whetstone against which our hearts and our actions might be sharpened. An hour in the chair, drilling down, casts a new light on everything we do, why we do it, what it does to us, what it means to let it go, and what means we have to find release.

Bio: Mark Pesce co-invented the technology for 3D on the Web - laying the foundations for the metaverse - has written eight books, including *Augmented Reality: Unboxing Tech's Next Big Thing*, was for seven years a judge on the ABC's *The New Inventors*, founded postgraduate programs at USC and AFTRS, holds an honorary appointment at Sydney University, is a multiple-award-winning columnist for *The Register*, pens another column for *COSMOS Weekly*, and is a professional futurist and public speaker. Pesce hosts both the award-winning 'The Next Billion Seconds' and 'This Week in Startups Australia' podcasts. Pesce brings his skills as a futurist to diverse sectors of the economy - including the futures of food, money and work - while also mentoring startups working at technology's bleeding edge.



Dr Vince Polito

What we know so far about microdosing

Microdosing has exploded in popularity over the past six years. A microdose can be 1/10th or less of a recreational dose, and users will often microdose regularly every 3 or 4 days over an extended period of time. Due to the very low dose, microdosers do not usually report the dramatic cognitive and perceptual changes that typically characterise psychedelic experiences, rather immediate effects are reported to be very subtle and sometimes barely noticeable. Despite this, microdosers make a wide variety of claims for the benefits of microdosing, including improved vitality, positive mood, increased attention, and greater creativity. The idea that substances such as LSD and psilocybin might be effective at very low doses has helped shift psychedelics from being a taboo topic to something that is favourably discussed in all kinds of mainstream media outlets and dinner party conversations around the world. But what do we really know about microdosing? Are the claims of microdosing proponents justified? Or, as some recent research has suggested, is the effect entirely due to placebo?

In this talk, I will review what we know about microdosing based on recent research, including my own longitudinal and neuroimaging studies. I will also trace some less well known strands of microdosing history, including early efforts to popularise the idea of taking very low doses of psychedelics in the 1980s, and a series of little known older experimental studies that took place prior to prohibition. I will discuss what this old and modern research tells us about the potentials of low dose psychedelics and the most promising avenues for future experimental trials.

Bio: Dr Vince Polito is a Senior Research Fellow in the Department of Cognitive Science at Macquarie University in Sydney, Australia and a former Associate Investigator of the Australian Research Council Centre of Excellence in Cognition and its Disorders. His PhD research won the Ernest Hilgard Award for the best thesis on hypnosis from the American Psychological Association and his work has been profiled by BuzzFeed, Nine News, ABC News24 and many others.

Vince's research investigates cognitive and neurological changes in altered states of consciousness. He has investigated attentional capacities in meditation, psychiatric symptoms of disturbed control, states of flow in expertise, hypnotic suggestions, and body representation alterations in virtual reality. He is particularly interested in how beliefs and expectations shape psychedelic experiences and conducted one of the first systematic observational studies of the effects of microdosing in healthy participants.

Website: www.vincep.cogscience.org

Dr Alison Pouliot

Between Sex and Death – A Journey in the Mycosphere

The scent of the prized Périgord truffle is somewhere 'between sex and death', according to one Australian forager. This fungus vies with Iranian caviar as one of the most expensive foods in the world. Australia's costly culinary predilections have driven a significant European truffle-growing industry since the 1990s.

Throughout history, fungi have confounded with their strange odours and appearances, peculiar habitats, and dubious connotations. Across continents and

languages, humans are sharply divided in their regard for fungi, with some cultures revering them and others subjecting them to the wrath of a reckless kick across the paddock.

Yet without fungi, life as we know it would be radically different. Fungi regulate the biosphere and support the earth's ecological functioning. They provide us with food, wine, and medicine. However, in the English-speaking world, the exceptionally few mushrooms with the capacity to dismantle human organs have received disproportionate attention. Centuries of mythologies and misunderstanding take time to unravel and redress.

In this talk, Alison will delve deep into fungal realms, showcasing the aesthetics of these perplexing yet enchanting organisms, and explore some of their natural and cultural curiosities.

Bio: Dr Alison Pouliot is an ecologist, author and professional environmental photographer with a focus on fungi. Her work spans both northern and southern hemispheres, ensuring two autumns and a double dose of fungi each year. Alison is actively involved in teaching, research and conservation, and has conducted over 700 fungus forays and workshops in a dozen countries over the last two decades. Alison is author of *The Allure of Fungi*, co-author of *Wild Mushrooming*, and her new book on fungi, *Underground Lovers*, will be published in March 2023.

Website: www.alisonpouliot.com

Dr Margaret Ross & Dr Martin Williams **The St Vincent's Melbourne Psilocybin-Palliative Care Trial**

Friday, 31st January 2020, was a momentous day in the history of psychedelic research in Australia, as the clinical team of St Vincent's Hospital Melbourne's landmark trial of psilocybin-assisted therapy for anxiety and depression associated with terminal illness treated their first participant in their first drug-therapy session. That day marked just over two years after the first planning meeting between Dr Marg Ross of St V's and Dr Martin Williams of PRISM, and almost ten years after PRISM's first efforts to initiate psychedelic medical research in Australia. The design of the St Vincent's palliative care trial draws on the many years of psychedelic medical research experience accumulated worldwide and also reflects the particular skills of the St V's clinical team in various modes of psychotherapy, music therapy, and beyond.

In her talk, Dr Marg Ross will relate the recent history of psychedelic medical research, describe the current study, including several innovative features of the St Vincent's trial, and discuss the path ahead as we negotiate various regulatory hurdles and contemplate the longer-term potential of psychedelic psychotherapy as a viable treatment for a range of mental health conditions.

Bios:

Dr Margaret Ross

Dr Margaret Ross is a consultant clinical psychologist and the clinical lead in Australia's first ever psychedelic clinical trial. The trial will be based at St Vincent's Hospital in Melbourne and will investigate the ability of psilocybin-assisted therapy to alleviate anxiety and depression in terminally ill patients.

The St Vincent's clinical trial will see palliative care patients given one to two doses of psilocybin and psychotherapy in a treatment protocol shown in overseas trials to produce rapid and dramatic improvements in depression and anxiety, and provide an altered outlook on their situation approaching death. Alongside psychotherapy and guidance, the psychedelic medicines are hoped to give terminally ill patients a new perspective on their lives, and to reduce the fear and depression which can often take over their final months.

Margaret will talk about the study's progress, its history, aims, and practical workings, whilst addressing the rationale for how psilocybin works to alleviate anxiety and depression.

Dr Martin Williams

Martin Williams PhD is currently a Research Fellow in Computational Neuroscience at the Turner Institute of Brain and Mental Health, Department of Psychology, Monash University, Melbourne. Previously, he was a Research Fellow in Medicinal Chemistry at the Monash Institute of Pharmaceutical Sciences, Monash University. Martin was founding President and is currently Executive Director of the health-promotion charity, Psychedelic Research in Science and Medicine (PRISM, established 2011), and founding and current Vice-President of the botanical/education charity, Entheogenesis Australis (EGA, established 2004).

Through PRISM, Martin and colleagues have been advocating since 2011 for mental health research using psychedelic compounds in Australia, and in doing so, have established global connections with leading researchers in the field. He has contributed to the planning and approvals process for several Australian clinical trials of psychedelic-assisted psychotherapy and is currently an investigator on several studies of psilocybin, MDMA, and other psychedelics.

Martin has been an articulate advocate for psychedelic medical research and the evidence-based clinical translation of psychedelic-assisted therapies for almost twenty years. He has co-authored several academic papers providing an Australian perspective on the subject, presents regularly at conferences and symposia, and is a frequent commentator on psychedelic research and governance in Australian print and broadcast media.

Website: www.prism.org.au

Douglas Rushkoff In Conversation

From hanging with Tim Leary in the 80s underground psychedelic culture to playing a crucial role chronicling the rise (and maybe fall) of cyberpunk rave culture in the 90s, Douglas Rushkoff has been at the frontline of some startling cultural shifts over the past few decades. His latest book, *Survival of the Richest*, is a wild ride through a world where tech billionaires are planning to avoid an apocalypse of their own making.

In a broad and free-wheeling conversation with science and technology writer Rich Haridy, Rushkoff will chat about everything from how technology has influenced the way culture has evolved in recent years, to how big business and money is playing a part in our modern psychedelic renaissance.

Bios:

Douglas Rushkoff

Winner of the Media Ecology Association's first Neil Postman award for Career Achievement in Public Intellectual Activity, Dr Douglas Rushkoff is an author, teacher, and documentarian who focuses on the ways people, cultures, and institutions create, share, and influence each other's values. He is Professor of Media Theory and Digital Economics at CUNY/Queens, where he founded the Laboratory for Digital Humanism. He is a columnist for Medium, technology and media commentator for CNN, a research fellow at the Institute for the Future, and a lecturer on media, technology, culture and economics around the world. Dr Rushkoff has served on the National Advisory Board of the National Association for Media Literacy Education, The Harrington School of Communications and Media at University of Rhode Island, the Board of Directors of the Media Ecology Association, The Center for Cognitive Liberty and Ethics, the United Nations Commission on World Culture, and as a founding member of Technorealism. He is on the Advisory Boards of MeetUp.com, Epic Privacy Browser, Loomio.org, Liquid Information, Artizens, and World Wide Workshop. He has been awarded a Fullbright Scholarship, and Senior Fellowships by the Markle Foundation, the Center for Global Communications, and the International University of Japan. He served as an Advisor to the United Nations Commission on World Culture and regularly appears on TV shows from NBC Nightly News and Larry King to the Colbert Report and Bill Maher. He also developed the Electronic Oracle software series for HarperCollins Interactive.

Website: www.rushkoff.com

Rich Haridy

Rich has written for a number of online and print publications over the last decade while also acting as film critic for several radio broadcasters and podcasts. His interests focus on psychedelic science, new media, and science oddities. Rich completed his Masters degree in the Arts at the University of Melbourne back in 2013 and was Chair of the Australian Film Critics Association for two years (2013-2015) before joining science and technology news outlet New Atlas in 2016. Since joining the New Atlas team Rich's interests have considerably broadened to examine the era-defining effects of new technology on culture and life in the 21st century.

Jerome Sarris & Daniel Perkins

Ayahuasca and DMT-Based Medicines for Mental Health Applications

Ayahuasca is a psychoactive tea containing DMT and several harmala alkaloids, which have been used ceremonially for centuries by Indigenous Amazonian groups. Recent decades have seen the brew gaining popularity internationally for its renowned therapeutic and spiritual effects. This has been evident in large numbers of people travelling to South America to partake in ayahuasca rituals; further international expansion of the Brazilian-based Ayahuasca churches; and growing numbers of underground facilitators in Western countries offering neo-shamanic ceremonies, sometimes utilising non-traditional plants, such as Acacia. At the same time, there is growing research interest in potential clinical applications of ayahuasca and encouraging early data.

This presentation draws on the research of our group over the last seven years, including the largest ever study of more than 10,000 ayahuasca drinkers in over 50 countries, to outline evidence relating to the mental health and wellbeing effects of ayahuasca, the effects of set and setting on outcomes, implications of this data and a proposed model for possible medical use, as well as our upcoming Phase 2 clinical trial investigating the use of an ayahuasca inspired DMT-harmala alkaloid product for treatment-resistant depression and alcohol use disorder.

Bios:

Jerome Sarris

Jerome Sarris is Professor of Integrative Mental Health at NICM Health Research Institute at Westmead, Western Sydney University. He is the Co-Director of the not-for-profit Psychae Institute (focusing on botanical psychedelic medicine research), and also holds an honorary appointment at the Florey Institute of Neuroscience and Mental Health, Melbourne University. Jerome has a particular interest in mood and anxiety disorder research pertaining to psychotropic plant medicines (e.g. Kava, medicinal cannabis, and psychedelics), nutraceuticals, and Lifestyle Medicine. He has over 220 academic publications (cited over 11,500 times), and has conducted many RCTs in the field, including six NHMRC and MRFF funded projects as a principal investigator (including recent funding for a study of a DMT based formulation for mental health indications). Jerome is an American Botanical Council Board Member, and a founding member of the Medicinal Psychedelics Research Network at Melbourne University.

Website: www.psychae.org

Daniel Perkins

Daniel Perkins is the Co-Director of the Melbourne-based non-profit organisation Psychae Institute, which conducts research on botanical psychedelics with the aim of progressing these as registered medical treatments. He is also an Adjunct Associate Professor at the Centre for Mental Health, Swinburne University, and a Senior Research Fellow at the School of Population and Global Health at the University of Melbourne.

After spending time in Peru in 2012 and witnessing remarkable ayahuasca induced reported improvements in mental and physical health conditions, Daniel led the commencement of Australia's first ayahuasca and mental health studies at the University of Melbourne, which grew to involve an international team of researchers from Brazil, Spain, Switzerland, and the Czech Republic collecting data from more than 10,000 ayahuasca drinkers in over 50 countries. He has led a range of other research relating to ayahuasca and medicinal cannabis, is a chief investigator on an NHMRC Phase 2 DMT-harmala alkaloid RCT study, and is co-founder of the University of Melbourne's Medicinal Psychedelics Research Network. Daniel also has a strong policy and regulation interest and was previously Director of the Victorian government's Office of Medicinal Cannabis.

Website: www.psychae.org

John Seed

'Deep Ecology' (activism and the power of ethnobotanical plants)

I have worked for worldwide rainforests since 1979. Although many of our efforts succeeded, for every forest saved, 100 have disappeared. You can't save the planet one forest at a time: one green Earth or a bowl of dust. Without a profound change of consciousness, we can kiss the forests goodbye, the ones we've "saved" alongside the rest.

Deep ecology is the change we need. Underlying all the symptoms of the environmental crisis lies a psychological or spiritual root – the illusion of separation from the rest of the natural world, which stems from anthropocentrism or human-centeredness.

Conditioned since the Old Testament to "subdue and dominate" nature, the modern psyche is radically alienated from the air, water, and soil that underpins life, reflected in the rapid shredding of all natural systems in the name of economic development. Deep ecology reminds us that the world is not a pyramid with humans on top, but a web. Humans are but one strand in that web, and as we destroy this web, we destroy foundations for complex life, including our own.

While we maintain a self-image created in the matrix of anthropocentric culture, a shrunken and illusory sense of self that doesn't include the air and water and soil, we experience nature as "outside" our self and fail to recognise that the nature "out there" and the nature "in here" are one and the same.

Bio: John Seed is the founder of the Rainforest Information Centre. Since 1979 he has been involved in the direct actions which have resulted in the protection of the Australian rainforests.

He has written and lectured extensively on deep ecology and has been conducting Councils of All Beings around the world for 35 years. Along with Joanna Macy, Arne Naess, and Pat Fleming he co-authored, "Thinking Like a Mountain - Towards a Council of All Beings" which has now been translated into 10 languages.

In 1995 John was awarded the Order of Australia Medal (OAM) by the Australian Government for services to conservation and the environment.

He continues to work on rainforest conservation worldwide and offers deep ecology workshops to heal the illusion of separation between humans and Earth.

For several years he has been offering workshops, presentations, poetry, and rap at many festivals including Subsonic, ReGrowth, Rainbow Serpent, Southern Oracle, Island Elements, Woodford, and Peats Ridge.

Website: www.rainforestinformationcentre.org

Agnieszka Sekula & Dr Prash Puspanathan

New World Technology and Old World Wisdom

This talk explores VR scenarios designed to promote movement through phases of psychedelic-assisted psychotherapy and discusses a novel protocol that utilizes unique features of VR as the moderator of the psychedelic journey. The protocol was developed by Enosis Therapeutics- focussed on combining new world technology with old-world wisdom.

A transition into and out of an altered state of consciousness requires support and guidance that may not be most efficiently facilitated in standard face-to-face therapy. In contrast, the ineffable world of VR effortlessly inspires a sense of surrender, mindful self-exploration, and consolidation of mystical or peak experiences.

In augmenting the set and setting protocol, our approach explores how to best use the contextual design of the psychedelic journey to catalyze the process of healing and maintain the sense of permanence that follows the structured psychedelic therapy. Our immersion models maintain a continuous, mindful, multi-sensory engagement throughout the entire therapeutic journey. VR serves as a catalyst that is congruent across preparation, dosing, and integration sessions, assuming a similar role that nature played in psychedelic retreats and tribal settings.

We use this powerful tool to delve deeper into psycho-emotional states that emerge as a result of the psychedelic experience. We do not think it coincidental that the emergence of VR and the societal use of psychedelics have common roots, and we believe that magnifying their shared mechanisms will offer unprecedented insights into our conscious and unconscious minds.

Bios:

Agnieszka Sekula

Agnieszka is a scientist with a background in biomedical engineering and medical imaging. She uses cutting edge biotech tools, including customised imaging robots, 3D modelling and VR, to innovate research in forensic medicine, space medicine or translational science.

Agnieszka is devoted to science outreach, extensively advocating for open science communication, community-led research and outcome transparency. For her outreach efforts, she won the best speaker award at 3D MED Australia and the MiLabs Image of the Year award, among others. Her work has been displayed worldwide, including Shanghai EXPO, Florence Biennale or Sounds of Space Exhibition in Austria/ South Africa.

Agnieszka has MSc degrees in engineering and in psychology. Her academic work was published in the Journal of Forensic Radiology and Imaging, and the Journal of Nuclear Medicine. As a freelance journalist, Agnieszka produced numerous articles on altered states of consciousness, including Transcendental Therapy: Mysticism, Psychedelics and Mental Health article for the prestigious Przekroj magazine.

Website: www.enosistherapeutics.com

Dr Prash Puspanathan

Dr Prash Puspanathan is a medical doctor and former Neuropsychiatry Fellow at The Alfred Hospital in Melbourne, is one of Australia's leading advocates for accessible psychedelic-assisted psychotherapy. In this capacity, Prash sits on the Advisory Panel of Mind Medicine Australia and is a clinical adviser to the Australian Psychedelic Society.

Prash is also the founder of pioneering digital currency brokerage Caleb and Brown, named "Fintech Startup of the Year" in 2018 by the Australian Stockbrokers and Financial Advisors Association. Caleb and Brown, Australia's largest personalised cryptocurrency brokerage firm, widens the suite of traditional wealth management services through the provision of bespoke digital currency solutions.

Prash has a Bachelor of Medicine and Bachelor of Surgery (Honours) from Monash University in Melbourne, a Masters in Psychological Medicine from the University of Melbourne, and has written for a number of publications including The Lancet and the Australian and New Zealand Journal of Psychiatry. In 2018, Prash was awarded Young Executive of the Year by the Australia-wide Indian Executive Council.

Website: www.enosistherapeutics.com

The Seed SistAs

Discovering the ancient through native power plants

Belladonna, henbane, and datura are some of the European power plants holding the key to an altered mind perspective, as well as being important physically-active medicine. Since ancient times, these incredible plants have been famed for applications in witchcraft and medicine. The plants carry an unbroken lineage that we can tap into to learn their gifts and messages.

Through many years of clinical practice, utilising these witching herbs as part of our work as herbalists, we are fascinated with the more subtle energies at work. We have walked with their mysteries and discovered how myth and history can give us clues as to the medicine contained within these plants. They aid in accessing subtle energy bodies as well as having physical effects.

We will take a walk through the mysterious past, and the exciting present and look for clues as to how we can harness the power of the witching herbs and flying ointments for deeper applications of the human condition. Come and join us on this walk.

Bios: The Seed SistAs, Kazz and Fiona, are writers, speakers, eco-activists and Sensory Herbalists who have dedicated their lives to furthering access to knowledge about the healing potential of the plant world. They both hold BSc's in plant medicine and are passionate about the evolution of plant connection through the use of the senses, observations and intuitive guidance. They campaign for freedom of information about herbal medicine through performance art and other creative means. Founders of an education community interest company, Sensory Solutions and an apprenticeship programme, they are actively servicing their communities with plant healing as Herbalists whilst teaching others how to do the same. They have a burgeoning online community to which you are all cordially invited.

Website: www.seedstistas.co.uk

Nick Sun

Some Traps, Pitfalls and Questions of the Psychedelic Path

Psychedelics are new territory. We are in a period of mass experimentation, both within approved institutions as well as the underground DIY scene.

Having worked as a psychedelic facilitator for over 20 years and walked the plant path for the last six, I know the hype and hoopla about illusions, delusions, and hazards along the way. This is especially true in the underground DIY scene, where a lot of self-experimentation is taking place that could never be allowed or explored in approved institutions.

Are psychedelic plants the magical cure—all that they're purported to be? Do you need an indigenous shaman or a Western doctor to heal you, or can you do it yourself? What are the drawbacks and side effects of taking too much, too often? Are you really Jesus Christ, or should you distrust spiritual awakenings that you smoke out of a crackpipe? Can one session of psychedelics reverse a lifetime of trauma, bad habits, and maladaptive coping strategies? Do you have to start wearing a bunch of dumb feathers and crystals all the time after drinking Ayahuasca? Is it okay to like Enya when you're candyflipping? Why are all the faces on the wall telling me that you're crazy? Can you truly reach enlightenment by trying as many psychedelics as you can get your hands on for a year, or are you just running away from facing your early childhood trauma?

I've lived most of the questions above, let me tell you my findings.

Bio: Nick Sun was an award-winning, international stand up comedian for 13 years. Then he drank Ayahuasca and had a malefic entity exorcism that ended a 12 year bout of depression. Following this, he met Gaia, who informed him that the shit was going down and that she needed help. The Ayahuasca spirit then activated his deceased herbalist healer grandfather's DNA within him and his life took a turn for the weird. He's been living in a fantasy novel of his own making ever since.

Nick has since spent the last 6 years walking the plant path and relaying his experiences of his self-apprenticeship as a plant medicine facilitator in the DIY underground psychedelic healing scene on his popular, irreverent underground blog (www.medium.com/@nicksun) that he is currently compiling into his debut coming-of-age book, "No Mo Trippin".

He lives and works somewhere on Southern Gondwanaland.

Website: www.patreon.com/nicksun

Keeper Trout

Strychnine

What is strychnine, and why do people seem to believe that it is in so many different plants and drugs? Has that ever been true? If so, why, when, and where? Why do so many people want to believe that strychnine causes symptoms that are different to strychnine's actual effects?

Keeper Trout takes us for a spin through the wacky world of drug deceptions and long-standing beliefs, both real and imaginary, in hopes of setting some rumours to rest while entertaining, and possibly illuminating, listeners in the process. Strychnine realities are even stranger than the popular fiction that it has created.

Bio: Keeper Trout is an author and archivist living in Northern California. Trout has published 11 books and numerous articles; mostly on psychedelic plants and drugs. He has also been a presenter at numerous conferences and festivals. Keeper Trout has been working to digitize Sasha Shulgin's archives since late in 2015 and in that process has been collaborating with Transform Press and Erowid to bring this material to the public. Trout is also presently serving as Acting President of the Cactus Conservation Institute and is engaged with several writing and editing projects for that organization.

Website: www.troutsnotes.com

Steph Tzanetis

PRISM: Trip sitting and psychedelic harm reduction

The principles for psychedelic support (otherwise known as 'trip sitting') that are promoted by international groups like MAPS Zendo Project and Kosmicare Association, as well as PRISM. Psychedelic support in music event settings is different from psychedelic assisted psychotherapy (PAP) in many ways. For example, with PAP a sitter is with a person when they set an intention and take a psychedelic. But for PRISM, trip sitters a person comes into care once they're under the influence, present in need of support, and polydrug use or other needs commonly influence the trajectory of the experience. Expanding on this latter example, a varied approach to trip sitting may be applied by PRISM from one event setting to another. Different resources are available when trip sitting at a multi-day regional camping event, compared to a single-day event in a metropolitan area.

This presentation draws on PRISM's Care Intervention service delivery data from recent years at multi-day regional camping events where a challenging psychedelic experience was the main reason for the presentation, highlighting the kind of interventions commonly applied by PRISM trip sitters working in such an environment. Examples include encouraging the person in care to remove their shoes and stand on the earth, which seems a highly effective intervention to alleviate anxiety during a psychedelic experience

Bio: Steph has close to a decade's experience providing formalised psychedelic support at music festivals in Australia and overseas, including in Portugal and North America. Steph has qualifications in law, humanities, alcohol and other drugs, and addictive behaviours, is a director of Psychedelic Research in Science & Medicine (PRISM) and was previously the DanceWize Program Director at Harm Reduction Victoria. Steph promotes psychedelic support that is based on the trip sit principles taught by comparable international programs, like MAPS Zendo Project and Kosmicare Association. Psychedelic support in event settings is different from psychedelic assisted psychotherapy in many ways, which will be catalogued throughout the presentation, and focus will be given to the respective opportunity to trip sit or deliver PAP in the outdoors.

Snu Voogelbreinder

Tobacco Substitutes in Australia – the Whitefella Perspective

Following on from Snu's previous EGA presentation on pituri and tobacco substitutes used by Aboriginal Australians, we revisit the topic from another angle by looking at plants used by non-indigenous Australians as tobacco substitutes. The tobacco of the newcomers was mostly imported in the early years of colonisation, and availability could be patchy. Curious townsfolk, farmers, bushmen, and explorers experimented with local plants that might be able to fill the gap, but most of this has been poorly documented and largely forgotten. This talk will present a summary of this buried history and the plants once smoked by white Australians.

Bio: Snu is an amateur ethnobotanist specialising in the study of psychoactive plants, fungi and animals. He is particularly interested in their use in shamanism and other spiritual practices, and is passionate about their conservation and responsible use. His book *Garden of Eden*, an encyclopedia devoted to this topic, was published in 2009, and a revised and expanded edition is being worked on. Snu's writing has also appeared in the journal *Eleusis*, and he was one of many contributors to the *Manual Of Psychedelic Support*, and *ESPD50 (Ethnopharmacologic Search For Psychoactive Drugs 50th anniversary 2017)*.

Website: www.troutsnotes.com/garden-eden

Lynette Wallworth

Transcendent Technologies: Shamanism in the digital age

Wallworth will discuss the creative journey she experienced while co-creating her ground-breaking Virtual Reality work *Awavena* with a Brazilian Amazonian tribe and how it has shaped her understanding of the potential for new immersive technologies to be used in support of current clinical trials.

Wallworth was invited by the Amazonian Yawanawa to create this stunning VR experience using cutting-edge technology to mirror their vision states. For the Yawanawa, "medicine" has the power to take you inside a vision to a place you have never been. By collaborating with Wallworth, Hushuhu, the first woman shaman of the Yawanawa was able to use VR-like medicine to open a portal to another way of knowing.

Awavena is a collaboration between a community and an artist, melding technology and transcendent experience so that a vision can be shared and a story told of a people who arose from near colonial extinction and who continue to fight to protect their grandmother trees. *Awavena* is an unmissable experience, and a gift from the Yawanawa they hope will shift our consciousness and change the way we perceive the world and the decisions we make.

Awavena screened first to international acclaim at the 2018 Sundance and Venice Film Festivals. It had its Melbourne debut at ACMI in 2019 and received an Emmy Award for Outstanding New Approaches to Documentary in 2020. It continues to tour and is used by the Yawanawa community to share a world view that holds the forest as central to our existence.

Bio: Australian artist/filmmaker Lynette Wallworth is renowned for creating profoundly empathetic works while pushing the boundaries of emerging technologies. She works primarily in immersive environments including 360 film,

virtual reality, interactive video, digital full-dome as well as feature documentaries. Wallworth has received multiple international awards for her work including the UNESCO City of Sydney award and two Emmy awards.

Wallworth's works have been shown at venues and festivals across the world, including the Lincoln Center for the Performing Arts, the American Museum of Natural History, the Australian Centre for the Moving Image, the Smithsonian; Venice Film Festival, London Film Festival, and Sundance Film Festival. In 2016 Wallworth was named by Foreign Policy Magazine as one of the years leading global thinkers. She is currently a member of the World Economic Forum's Global Future Council on Augmented and Virtual Reality and Director of the Forum's New Narratives Lab for under-represented voices. She sits on the board of the Sundance Institute.

Website: www.lynettewallworth.com

Workshops

Caine Barlow, Darklight, & Jess Saunders

Mushroom Culture without a Lab I (Introductory Workshop)

Learn and share skills around isolating and cloning functionally sterile mushroom tissue and build your own mycoculture library!

This is a practice-based workshop and requires no prior knowledge. Don't sweat it, this isn't rocket science. Bring your best hand/eye coordination skills and learn the first stages of practical mushroom culture. Take away awesome samples to start your very own culture library.

The fruits of this workshop can be used to upscale and grow your own edible, medicinal mushrooms, and many other ethnobotanical species so you can clone and store material at home for further research (and tasty dinners). Over the last decade, advances in mushroom cultivation made cloning and storage easier - any citizen scientist who has access to a standard kitchen can do it. We'll be focusing on the Rush Wayne Hydrogen Peroxide cloning tek, but there will be other teks taught during this workshop too. If you have mushroom mad skillz already, you're still welcome to attend and participate in the knowledge sharing.

There are so many mushrooms in Australia that are unidentified or unknown to western science. There is immense potential in Australian ethnomycology and everyone who wants to can play a part.

Caine Barlow, Darklight, & Jess Saunders

Mushroom Culture without a Lab II (Intermediate Workshop)

Beyond learning the skills necessary to isolate and clone fungi, there is a range of other techniques to master on the path to growing mushrooms. This workshop builds on the techniques taught in the introductory workshop and requires little prior knowledge other than familiarity with the peroxide agar tek.

This workshop will cover how to use your agar cultures to grow your own edible and medicinal mushrooms. We will demonstrate agar to spawn to bulk to fruiting, and discuss variations based on species. We will also discuss basic equipment needed along the way including still air boxes and fruiting chambers.

Over the last decade, advances in mushroom cultivation have made growing considerably easier and possible for any citizen scientist with a home kitchen. If you have mushroom mad skillz already, you're still welcome to attend and participate in the knowledge sharing.

Darklight, Jess Saunders, & Caine Barlow

Plant tissue culture

Plant tissue culture can be an easy way to produce large numbers of disease-free clones much faster than more conventional propagation techniques.

It's also a starting point for further plant molecular and metabolic studies, mutation breeding, and it can be a critical technique for conservation projects.

This workshop will offer demonstrations to guide you through preparing plant tissue culture media and working with your sterile air box or laminar flow cabinet to initiate sterile seed cultures of Australian Acacia for further replication.

Many local Acacia species are an ideal (and forgiving) starting point for beginners to understand the basics of plant micropropagation.

We'll cover the equipment you need, outline the theory and walk you through good sterile technique and discuss choosing between potential variables for further investigation.

Previous sterile tek/mycological experience is an advantage - but not a requirement. The best things you can bring to the workshop are good close observational and record-keeping skills.

Bios:

Caine Barlow

Caine Barlow is a mycologist and fungi educator based in Melbourne, Australia. He gives regular talks on mycology, fungi conservation, and gourmet mushroom cultivation. Caine is a member of the Australian organisations Entheogenesis Australis, The Australian Psychedelic Society, and is co-founder of the US organisation the Entheome Foundation.

Caine started foraging for mushrooms in the early 1990s, beginning his cultivation of gourmet fungi in the mid-2000's. He did his Bachelor of Science at the University of Tasmania and a Master of Science at the University of Melbourne, where his research project was based around conservation mycology.

In addition to fungi, Caine has had a long term interest in ethnobotany, ethnobotanical literature, and growing medicinal plants - in particular cacti and Acacia. He has written for DoubleBlind, ThirdWave, Microdose, and Healing Maps. He is a "Trusted Identifier" on The Shroomery, and a moderator on many Facebook

fungi groups. Caine posts regularly on his Instagram, @guerrillamycology, sharing adventures from cultivation, foraging, and ethnomycology, to interesting observations from his home lab.

Website: www.guerrillamycology.com

Darklight

Darklight has been working with aseptic medicinal and endangered plant species propagation for over 20 years. Moving into fungal propagation was a natural progression (or unfortunate side-effect - you choose).

Right now, Darklight is working on long-term archiving of local NSW fungal species for future remediation and revegetation work. The culture library consists of a fair range of local macrofungi whose ultimate purposes have yet to be revealed to us. We're sure they're here for a reason... and so are we.

What fascinates Darklight is the progression of fungal lab technology towards citizen scientist accessibility. Kitchen mycology is increasingly easy, safe and productive. Tekes keep getting better and the results are more diverse and rewarding.

Jess Saunders

Jess is a botanical illustrator and tattooer living in Northern Rivers NSW/ Bundjalung country.

A love of the natural world, gardening and science have lead her to ongoing involvement in a citizen mycology project, cactus farming, low harm off-grid living and study of plant tissue culture.

Ema Corro

Fungal conservation through community science

Mycology is the field of science that is mostly driven by the community. Not only do citizen scientists contribute to taxonomic and ecological research, but they play a vital role in collecting data for the conservation of threatened fungi. Citizen scientists also drive many innovations in applied mycology, including in cultivation, myco-materials and medicinal fungi. In this workshop, we will discuss issues facing fungal ecology, conservation, and regeneration in Australia and how community science can help overcome them. There will also be a chance for hands-on experience looking for fungal DNA in the environment as well as extracting and sequencing fungal DNA using a portable DNA sequencer.

Bio: Ema Corro is a mycologist who believes that the best way to protect the environment is to involve the community in all aspects of science and conservation.

Ema loves everything about fungi and is amazed by their ability to increase people's sense of connection with the natural world. She is coordinator of MYCOmmunity Applied Mycology, an organisation that aims to raise awareness of the importance of fungi in health, sustainability and the environment, as well as providing scientific training and resources to the community. Ema coordinates the Wild Fungi DNA

project, developing environmental DNA techniques that citizen scientists can use to search for rare and endangered fungi. She is also researching using waste to produce sustainable mycelium-based construction materials.

Dr Liam Engel

Propagating prickly plants: a Cactaceae workshop

In this workshop, Dr Liam Engel will provide everything necessary for you to grow more cactus than will fit in your backyard. This workshop will include hands-on tutorials covering cactus seed raising and grafting. All participants will have the opportunity to propagate their own San Pedro to take home.

Alongside the tutorials, workshop discussion will cover pollination and seed production as well as economics, vendors, and ethics relevant to contemporary cactus culture. This workshop will focus in particular on the propagation of two of Liam's favourite genera, *Trichocereus* and *Lophophora*, although the techniques covered will be applicable to most genera in the Cactaceae family.

Bio:

Dr Liam Engel is a drug science researcher and communicator. Liam's passion is illicit drugs, particularly the areas of harm reduction, psychedelics, ecology, internet and reform. His unique perspective draws on skills in health and medicine, communications and social sciences, as well as botany and horticulture.

Liam is an adjunct research fellow at Edith Cowan University's School of Medical and Health Sciences, associate editor at AOD Media Watch and a core contributor to *Entheogenesis Australis*.

Website:

www.liamengel.doctor

www.themescalinegarden.com

Tom Forrest

Cannabis Agronomy – A Modern Review of Cannabis Cultivation

In this workshop, I will show a short film about cannabis cultivation at our licensed and certified organic (BioGro) cannabis farm in Aotearoa. The viewing will be followed by a deep discussion of cannabis agronomy, techniques, inputs, and crop management, with a Q&A about cannabis, legal access to cannabis commodities, and the current status of licensing and cultivation laws.

Bio: A global leader in the cannabis industry, Tom Forrest is the first ever Churchill Fellow for Cannabis Agronomy and is an author on Cannabis botany, industry, and cultivation. As part of this fellowship in 2019, Tom spent time at 50 licensed commercial growing operations in 10 different countries.

Tom is currently the co-founder and Cultivation Director for Puro (Marlborough, NZ), co-founder and Managing Director of Indicated Technology (Melbourne, VIC), and Communications Manager for Stealth Garden Wholesale (Adelaide, SA). Tom has instigated and pioneered multiple successful cannabis projects in Australia and New

Zealand, including the university WHO partner site in 2016/2017 and worked with more than 50 groups throughout Australia and New Zealand, providing consulting and equipment procurement services.

Tom has significant experience in horticulture and protected cropping, with specialist training in hydroponics and plant botany. Tom has intimate knowledge and understanding of pharmaceutical standards required of cannabis agronomy. This, combined with his business and marketing qualifications and expertise has seen Tom become a sought-after lecturer, speaker, and advisor on sustainable and successful cannabis cultivation.

Ceri Hann

Psychedelic Soapbox

Where: "Outer Space"

When: 12:30 pm, Sunday 4th

They say cleanliness is next to godliness, but what if god is a glistening hyperdimensional mantis who wants to probe your innermost psychic organs?

Everyone's invited to participate in this freewheeling, anarchistic, micro symposium-within-a-symposium, where Garden States attendees can get on a soapbox and present literally anything.

Share some metaphysical theatre, cognitive parkour, acid origami, pretzel logic, clouded thoughts, absurdist anecdotes, or psychedelic confessions – the choice is yours! Guided by the mad master of ceremonies, Ceri Hann, this lunchtime fun time will test the parameters of consensus reality, question wtf it's all about, and encourage us to reach our weirdest and wonderfulest potential.

Bio: Ceri Hann is a multidisciplinary arts practitioner who develops participatory art forms intended to enhance the conditions for collective idea generation. The gifting of metaphorical objects to instigate philosophical discourse stems from Ceri's PhD research at RMIT entitled *The Making of a Knowledge Casino* (2016). Over the past ten years, Ceri has been a sessional tutor and guest lecturer in the School of Art and School of Architecture and Design at RMIT and has an ongoing engagement within the Art in Public Space and MFA post-graduate programs. Ceri has presented work at Melbourne Comedy Festival (2017), Liquid Architecture (2015), RMIT Project Space (2014), and run workshops at West Space, Blindside Sound Series, and Testing Grounds. Ceri is also one half of Public Assembly, an art and design practice focused on the dynamics of social space, investing time, investigating place, and achieving unique creative interactions.

Stephanie Hazel

Embodied Plant Wisdom

Entheogens and psychedelic journeys can facilitate communication and relationships with plants and provide ecological and medicinal insight. In fact, they have done just this for healers throughout plant people throughout the ages.

How can we draw upon the expanded awareness of altered states to cultivate better relationships with the plant world? How do we use our physical and imaginal senses to make friends with plants? This workshop explores these questions and provides practical, embodied ways to connect with the plant world.

Bio: Stephanie Hazel is a practicing herbalist in Melbourne who has been working with herbal medicine and traditional healing systems for 15 years. Her approach is informed by holistic principles of traditional western herbalism and Chinese herbalism, sacred plant medicine, and the anthropology of healing. Stephanie is passionate about our existing intuitive wisdom and ancient connection to plants. She supports people to deepen their relationship to their own bodies and the greater living world through herbal medicine, ritual, and deep ecology.

Website: www.stephaniehazel.com.au

Pixie Miller

Psychedelically Aware

This workshop is an introduction to the work of the Psychedelically Aware group and The PATCH online community space. The community has been discussing how to make entheogen circles safer. With increasing media attention and clinical research, there are a lot more people entering the entheogen community. Some are seeking to self-treat conditions, while others are curious to explore themselves in new ways. A response to the potential and actual harms reported was essential if we are to progress rather than attract negative attention.

This workshop covers how to safety plan for entheogens consumed within group settings, including preparation, interaction risks, and contraindications, and how differences in individual metabolism and physiology can factor into adverse reactions. Ways to care for yourself after an entheogenic experience. Considerations when choosing a facilitator and medicine you are interested in. Questions to ask and how to spot red flags that may mean a particular facilitator is not a good fit for you. What is considered appropriate behaviour by facilitators, and what the responsibilities of participants are. Basics of mental health first aid and how to spot signs of a medical issue arising. The need for trauma-informed practices and harm minimisation to be incorporated into facilitation. Ways to bring accountability into underground facilitation. How we can contribute to a model of best practice, open-source code of ethics, and safety training. Conflict resolution and mediation when issues do arise and where to seek support. The problem with guruism and why there is a need for our community to address this culture. How to report harm or negligence if it occurs. This project has been done in collaboration with other groups working in this space and aims to take a compassionate approach to harm minimisation.

Bio: Pixie is the founder of the Psychedelically Aware harm minimisation network and The PATCH – The Psychedelically Aware Talking Circle Hub. Having studied psychology and health science, while pursuing postgraduate neuroscience, she has a broad understanding of how entheogens affect both the body and mind. Pixie is passionate about research and how entheogens could be used in therapeutic models. Currently, her pursuit of harm minimisation through The PATCH has been gaining momentum with community discussions and education. Drawing upon interdisciplinary knowledge to collaborate on community-led initiatives, the potential of entheogens can shine in a safer space.

Amanda Morgan

Targeting Pollutants With Fungi

This workshop is an introduction to using fungi to tackle pollutants with Amanda Morglund from Fungi Solutions. Amanda Morgan is the Director of Fungi Solutions, where collaboration with Fungi is used to recycle waste sources into new materials. Fungi Solutions is Australia's first Mycocycling service, transforming industry waste and environmental pollutants into packaging and structural materials.

In this workshop, we will learn how to train fungi to grow on a specific pollutant and adapt the mycelium for a remediation site with consideration for cultivating in the Australian environment with the waste resources available. Participants will take home an agar plate culture of our fungi culture to try targeting their own strains at home.

Bio: Amanda Morgan leads the Research and Development of Fungi Cultures to tackle challenges of waste management and ecosystem rehabilitation through circular design practices. Amanda is passionate about fostering collaborative partnerships that create health and abundance, bringing natural and social systems into balance through regenerative natural materials.

Website: www.fungisolutions.com.au

DJ Krusty & VJ Mandala

Grok this Sound and Vision 2.0

A link to this online workshop/forum pre-party will be provided to all ticket holders approximately 24 hours before the event. This event will take place from 8.30pm-11:30pm on Saturday 3rd December, 2022.

Grok this Sound and Vision v2.0 is a live mixed streamed audio-visual media event created by the multi-decadal creative collaborators DJ Krusty and VJ Mandala.

This digital experience will traverse an abstract sonic and visual performative landscape, that maintains a psychedelic aesthetic expression, as a celebration, of the simian evolutionary and revolutionary relationship, between mind and hyper-dimensional reality and beings, through the plant mediators.

Bios:

Eugene NRG - DJ Krusty

DJ Krusty has been spanking the planks and enjoying DJing for a long time now, he has performed at gatherings and festivals all over Australia and has travelled to Europe, the Middle East, Asia, and America to share his sonics with psychedelic dance party people.

A well-seasoned Melbourne-based Disc Jockey, Krusty has been sculpting mystical electronic musical journeys mixing trance, ethno-techno, deep oriental house, psy dub, and worldly chill-out regularly since the early 90's... His central theme is to synthesise the various art mediums required or available in any given circumstance so that he can possibly bring something special, something magical, to the moment to be shared and created by all.

Krusty has composed and released psychedelic techno music under a number of project monikers which include House of Pagan Christians, Organic Madjik, as well as DJ Krusty remixes on vinyl and CD.

During this time, he also helped create the Green Ant music label, which released Australian psychedelic electronic CD dance music for over 10 years.

These days DJ Krusty is semi-retired from making music, he now spends most of his time working as a film-maker.

Adem Jaffers - VJ Mandala

VJ Mandala - During a photography gig during the late '80s, Adem was first introduced to analogue and digital video art during Future Films production of the ground-breaking music video clips for Max Q, then soon after for Best Video ARIA nomination for Third Eye.

That cultural and creative impetus saw Adem gravitate further toward [the] cutting-edge experimental digital art with a fervour, initially via the legendary Amiga-500 computer and analogue video feedback.

Then expanding his visual repertoire to incorporate lighting and laser, fusing these mediums into dynamic illuminated projection designs for the Psy-Harmonics, Every Picture Tells a Story, and Earthdance. Pure, Renaissance, RPL, EGA, Big Day Out, Earthcore, Rainbow Serpent, Medicine Dance; as well as internationally for Infinite Frequency (LA), Tsunami (NYC) and Detroit Movement bush-doofs, dance parties and festivals; including a Laser op residency at the established Machine monthly techno night.

Adem's works embody and explore exo-eso-teric concepts infused within the psychedelic, spiritual, scientific, and socio-political and cultural paradigms that the highly influential Cyber and Rave culture had originally embraced – yet are still relevant today. He has also been invited to exhibit print works at various exhibitions over the years.

In collaboration with Cyber Dada and Don't Shoot the Messenger, Adem was a seminal figure in the creation of the experimental Cyberthon video-art live-to-air broadcast events held at the RMITV studios and TVU's pop-up TV broadcast warehouse during the early to mid '90s. The complete Cyberthon original mastered recordings have been digitised into the ACMI archives. Adem's key involvement is portrayed within VICE doco Thump, and article in The Creators Project, and in the Techno Shuffle book by Paul Fleckney.

From the mid to late nineties onward, Adem also ventured into commercial art, beginning as a 3D animator, then specialising in Compositing for TV series, TV adverts, and Music Video.

Adem still continues to VJ, with a focus on live-stream events.

Dr Lani Roy & Melissa Warner

Realms of Preparation and Integration

This workshop provides a comprehensive skillset to support a spectrum of psychedelic experiences. We will explore options for preparation, considerations for the journey, and pathways for integrating psychedelic states. Psychedelics with supportive set, setting, and skills can facilitate transformative experiences. While we can't ever predict the outcome, we can certainly invest a reasonable amount of dedication in learning some appropriate tools, skills, and strategies for harm reduction and benefit maximisation. We will unpack knowledge and frameworks supported by practical examples and guided reflections. This will incorporate elements from wisdom practices, neuroscience, modern therapeutic modalities, as well as nature-based and indigenous perspectives.

Bios:

Dr Lani Roy

Dr Lani Roy is The Founder of The Signs of Life Psychology. Lani is a psychologist, social worker, and therapist and has spent the last 15 years working in mental health, suicide prevention, trauma, sexual abuse, family violence, and the disability sector.

She works alongside Melissa Warner, providing a range of educational and group-based psychedelic programs. Lani provides Psychology, Social Work, and Bio Medical student placements across PRISM, EGA, APS and the Mental Health Foundation. Lani coordinates the psychedelic and plant medicine Mental Health Professional Network (MHPN).

Lani has worked with borderline personality and dissociative identity disorder in various roles in the community, such as: rape crisis centres with victims of ritual abuse, childhood and adult sexual assault, supporting women in the sex industry, and survivors of human trafficking.

A series of challenging and incredible events has led Alana into the field of psychedelics.

Lani has begun providing PAP for clients accessing ketamine treatment in Australia. She is currently working on a range of research trials and has a specific passion for the Australian Ayahuasca dieta experience in regards to culture, community, and practices.

Lani is passionate about connecting with professionals and community members who have integrity, creativity, and innovation; people who can uphold the sacred nature of these medicines as we bring them safely into the clinical context. Most importantly, she is a mother of two young boys, an owner of two beautiful high needs French bull dogs, and a wife of a sexual abuse detective.

Website: www.thesignsoflife.com.au

Melissa Warner

Melissa's mission is to cultivate an evidence and experience-based understanding of psychological well-being, with the aim to translate this knowledge into systems that support eudemonic agency and mental health. Melissa is Secretary of Psychedelic Research in Science and Medicine (PRISM) a charity supporting the creation of psychedelic research trials, a teacher to future psychedelic therapists at Mind Medicine Australia and Psychedelics Today, a co-founder of The Australian Psychedelic Society and a member of the UK-Australian Young Leaders Forum.

After graduating in Neuroscience from the University of Melbourne, Melissa travelled to leading international centres of psychedelic research, transformative technology and meditation. She is now integrating these experiences to contribute to the establishment of next-generation of mental health treatments in Australia. Melissa is currently a post-graduate psychology student at The University of Melbourne and is leading the development of a therapeutic virtual reality program to support psychedelic-assisted therapy through meditation training and immersive visuals.

Melissa is an experienced meditation guide, having studied under the Mahamudra lineage of Tibetan Buddhism. Melissa's approach is informed by a scientific outlook, a transpersonal perspective, a positive psychology lens, and grounded in the somatic. In her free time, Melissa enjoys her yoga practice, poetry, dance and painting.

Panels

Psychedelic Capitalism: A Riddle Wrapped in Mystery

Facilitator: Dr Prash Puspanathan

Panel guests: Shaun Duffy, Dr Sam Bannister, Dr Lily Kay Ross, David Nickles and Dr Martin Williams

Panel - Friday

Duration: 60 Minutes

Every psychedelic has a prophet. New Age shamans emerging from time spent in the Amazon preached that ayahuasca would heal our souls. The student counterculture promised that LSD would liberate us from centuries of sexual repression. The Native American Church said that peyote would reveal the God of Christianity. The high priests of psychedelics have always been at the margins of society, their messaging too communitarian, too anti-establishment, too outright heretical to spread beyond the borders of Haight-Ashbury or the rainforest.

Yet, psychedelics have found a new messiah. One that all but guarantees an era of mass evangelization: corporate capitalism. Venture capitalists, pharmaceutical companies and marketing executives have all heralded in the psychedelic renaissance of the 21st century. Unlike most of their predecessors, corporate interests are armed with the capital, political clout, and resources needed to convert millions to the cause. With the risks of greed, patent wars and deceptive marketing practices, how do we ensure that capitalist enterprises serve as effective stewards of psychedelics?

This panel will explore the paradoxes of psychedelic capitalism. How can psychedelics remain a tool for spiritual growth, political transformation, and medicinal healing when they're promoted by the very institutions which these tools are used to critique? At the same time, how can psychedelic researchers, indigenous communities and society at large benefit from the talent, resources, and scientific acumen of the emerging psychedelic industry?

Ayahuasca and Freedom of Religion in Australia

Facilitator: Amar Dhall

Panel guests: Torsten Wiedemann and Manny Satija

Panel - Sunday

Duration: 45 Minutes & 10 Q&A

Our panelists wrote the Australian chapter for the book "Religious Freedom and the Global Regulation of Ayahuasca." In this panel, the authors will explore different ayahuasca jurisdictions, focusing in particular on the constitutional arguments for using ayahuasca under the freedom of religion provisions in the Australian constitution. Such approaches have worked in some other countries where ayahuasca use is legal under certain circumstances, but each country's constitution is different and each country has cultural differences that can impact any legal challenges to state and federal laws.

The complexity of the Australian constitution results in a lot of erroneous layperson interpretations and this misinformation is often discussed in the fight for psychedelic legalisation. This panel will tease apart valid and invalid approaches to help those who are contemplating legal challenges and those wondering why there has been no such progress in Australia. It will also look at ways forward, especially as we emerge from our colonial shadow.

The discussion will begin with the panelists explaining the thesis of their book before opening up for questions. This is a rare opportunity to engage with constitutional scholars and other experts in criminal law and drug law reform, all with a passionate interest in legalising psychedelics.

Breathed into Being: Ecodelia in Contemporary Art

Facilitator: Tessa Laird

Panel guests: Janet Laurence, Adele Wilkes, Andrew Goodman and Nicholas Dorey

Panel - Sunday

Duration: 45 Minutes & 10 Q&A

"To say that forests and marine microbes form the 'lungs of the earth' is an understatement. They literally breathe us into being. All cultures turn around plants' metabolic rhythms. Plants are the substance, substrate, scaffolding, symbol, sign and sustenance of political economies the world over. We must learn how to work with and for the plants so that we can be nourished and clothed and sheltered and pleased and healed — without destroying the earth" — Anthropologist Natasha Myers

The devastation of capitalism-colonialism threatens all ecologies and environments, including humanity's survival. Any hope of change will require careful listening to the earth, bold feats of imagination and a radical rethinking of our culture's relationship to nature, shifting from anthropocentric separation and individualism towards connection, mutualism and collective action. Essential to this is an acknowledgement of the fundamental role that the vegetal world plays in sustaining our existence as well as our wellbeing.

David Luke coined the term 'ecodelia' to describe the confluence of ecopsychology and the psychedelic experience, resulting in a deepened relatedness to nature. This panel—facilitated by art critic, writer, artist and lecturer Tessa Laird—brings together four contemporary artists to discuss how their creative practices and research explore the relationship between humans and the 'more-than-human', and ways in which art can bring about a spiritual ecology. Encompassing plant and fungal intelligence, indigenous cosmologies and practices, alchemy, environmental activism, ethnobotany and consciousness exploration, many artists are resisting anthropocentrism and conjuring alternative ways of coexisting with multispecies on this extraordinary blue planet.

Reports from the Frontier: the Present and Future of Australian Psychedelic Research

Facilitator: Chris Letheby

Panel guests: Dr Margaret Ross, Dr Martin Williams, Renee Harvey, and Dr Vince Polito

Panel - Sunday

Duration: 45 Minutes & 15 Q&A

For some time now, Australia has lagged behind much of the research world when it comes to institutional psychedelic medical research. Following the dedicated work of the community at large, some real movement is taking place in scientific and academic circles around Australia, with Melbourne emerging as an epicentre of much of this new and exciting research.

Listen to the experts discuss the current and future status of Australian psychedelic clinical trials and some of the therapeutic benefits of entheogens for those looking to explore academic and research settings down under. We will discuss why psychedelic medicine has recently taken off in Australia, as well as challenges ahead for research teams. How can we 'keep it real' as big players turn to psychedelic research projects? What role does the community play in psychedelic medicine, and what warning signs and traps should we look out for to keep the research on track?

Entheogenesis Australis Psychedelic Symposium 2022

Garden States 2022 Ethnobotanical Plant Swap

If you love growing and sharing plants, make sure not to miss the Garden States 2022 Plant Swap. From new sprouts to seasoned tree huggers, the Australian plant community will be out in force!

If there's a better place for sharing plants and their people, we're yet to hear about it. We recommend you come as a giver, with the hope of finding something new and interesting for yourself. We recommend you bring your spare seeds, seedlings, cuttings or other home-grown plant stuff to gift or trade and enjoy the generosity and connoisseurs of EGA ethnobotany.

Newbies welcome. Please let others know if this is your first plant meet, we will be happy to share with you without trade. Take it home and keep growing and gifting - what happens at the plant meet does not stay at the plant meet.

Raffle prizes

EGA is a not-for-profit organisation that exists for the benefit of others, usually at personal expense to those behind it. The funds raised by the raffle really help relieve organisational pressures and makes EGA more sustainable as a whole. Help us by helping yourself to raffle tickets. You might be unable to attend the event this year, but you don't have to miss out on supporting the EGA cause, or the fantastic raffle prizes. To help encourage online ticket sales, there will be a bonus prize drawn that is only for raffle online ticket holders.

Raffle winners who are not present to collect their prize at the time of the draw will be notified via email (and possibly phone) and we will arrange for your donation to be sent to you. International winners will receive an EGA pack as some goods cannot be sent overseas. There may also be some restrictions on delivering some prizes to particular states or territories, and we will attempt to compensate where possible.

The EGA Raffle is an important fundraiser which we run in parallel with major EGA events, and all funds raised go towards supporting future EGA events and related projects. We at EGA are therefore very gracious of all support we receive with the raffle, and we would not be able to deliver all of this amazing content without it.

ARTIST BIOGRAPHIES

IzWoz

Visual art and Earthwear created by two creative creatures doing their best to make Earth like home. IzWoz have been contributing art to EGA projects and events since 2004. Working with ink, paint, watercolour, print and digital media, they are always in the process of creating something new. When not creating art they are likely out on adventure exploring nature or working on other creative or community projects.

www.izwoz.art

www.twitter.com/IzWoz

www.instagram.com/izwoz_art

SpaceBeingz Continuum

A collaborative art and tech project; dissolving the boundaries between creativity, technology and community. Exploring the mysterious in search of the beautiful weirdness.

Art | Animation | Audio | Code

We Are All SpaceBeingz!

www.spacebeingz.io

www.twitter.com/spacebeingz

BioFreQ

Visual artist, sculptor, DJ, bushland regenerator. Original recycled repurposed and regenerated illuminated event installations. Plant friend and custodian of vintage Turbo Sound System.

www.instagram.com/biofreq

Bryan Itch

Bryan Itch is a visionary artist/muralist based in Melbourne. From early beginnings in the late nineties graffiti scene his work has naturally evolved to reflect & illustrate the ineffable spaces explored alongside our entheogenic teachers.

www.inkbombstudios.com

www.instagram.com/bryan_itch

Stiff Ives

Stiff Ives is a Melbourne based artist who uses her art as a vehicle for communication, offering the viewer not only a visual expression of ideas, but a chance to connect deeper with the natural world. There are characters & themes that appear consistently in her work, igniting an interest in people to reconnect with wild life both externally & internally.

www.instagram.com/stiff.ives

www.stiff-ives.squarespace.com



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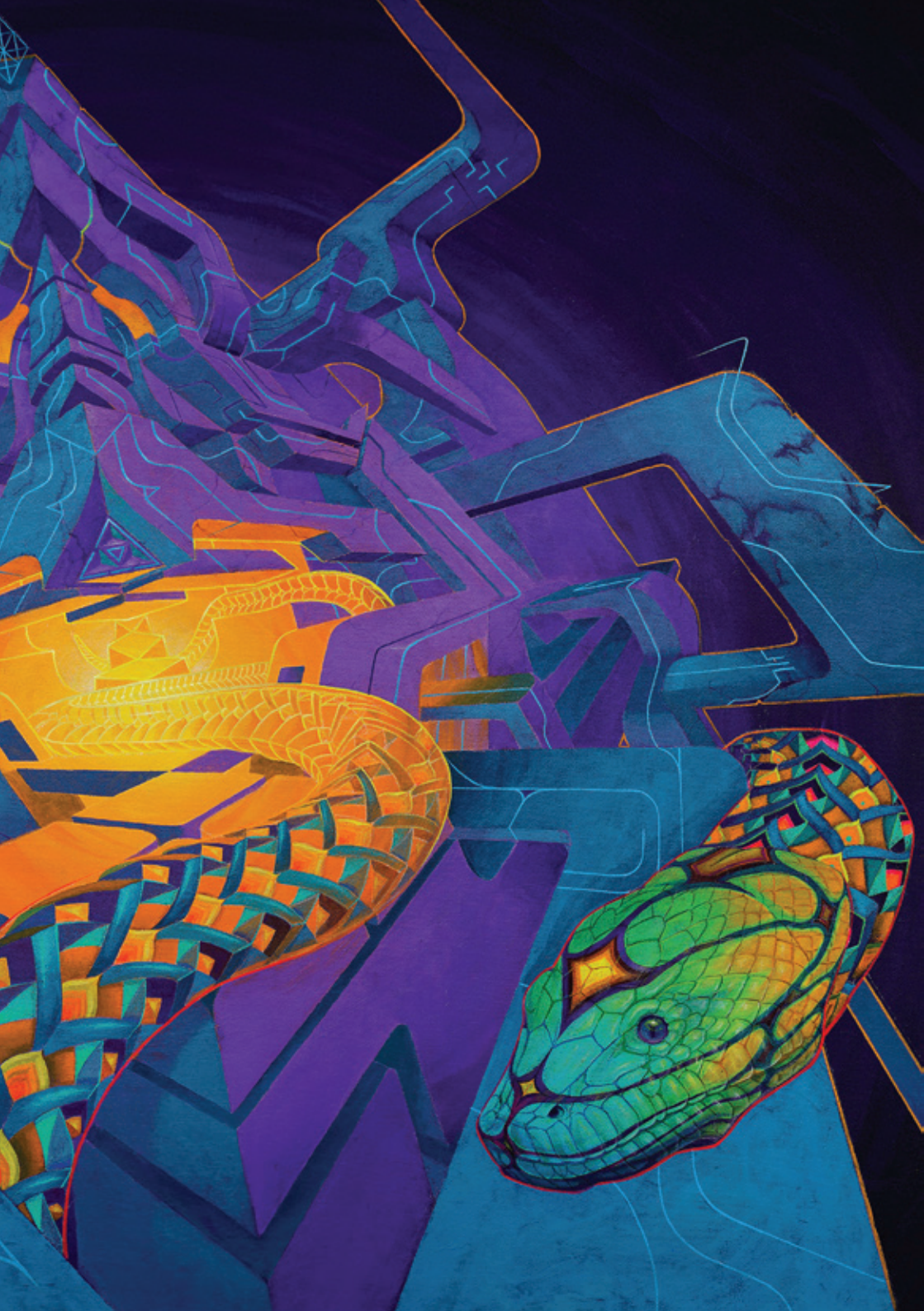


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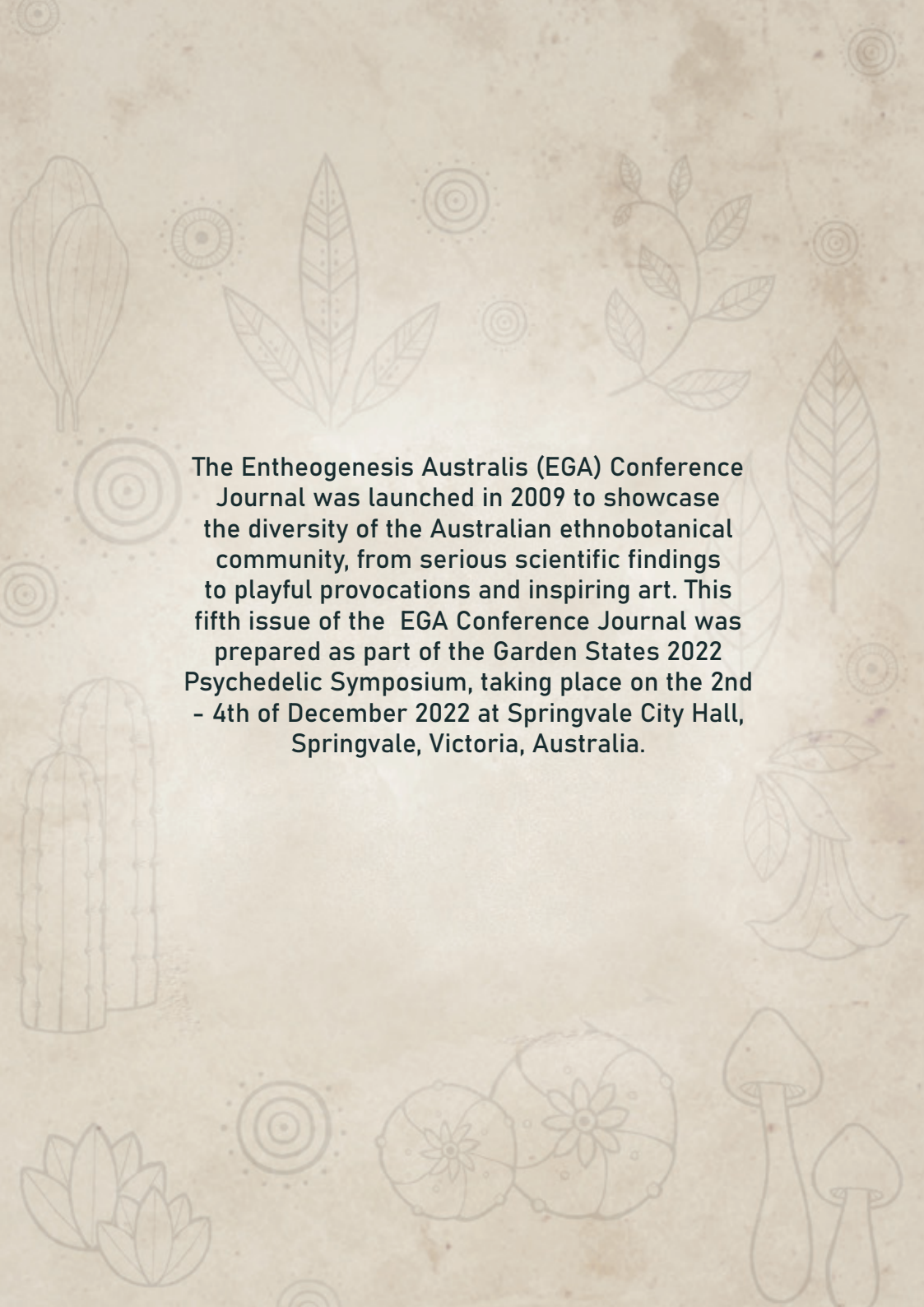










The background of the page is a light beige, textured surface. It is decorated with various faint, line-art style botanical illustrations. These include several different types of leaves, some with veins, some with small dots or patterns. There are also circular motifs, some resembling sunbursts or mandala-like patterns. A cactus-like plant with vertical ridges is visible on the left side. At the bottom, there are illustrations of what appear to be mushrooms or small plants with star-like centers. The overall aesthetic is natural and artistic.

The Entheogenesis Australis (EGA) Conference Journal was launched in 2009 to showcase the diversity of the Australian ethnobotanical community, from serious scientific findings to playful provocations and inspiring art. This fifth issue of the EGA Conference Journal was prepared as part of the Garden States 2022 Psychedelic Symposium, taking place on the 2nd - 4th of December 2022 at Springvale City Hall, Springvale, Victoria, Australia.