University of Plymouth
Cognition Institute conference
18.06.2018

Handout by
Christopher Germann
Marie Curie Fellow
PhD Candidate
CogNovo
Cognition Institute
University of Plymouth
www.cognovo.eu/christopher-germann
www.cognovo.eu/project-14

A manifesto in favour of systematic scientific research on psychedelics and against the promotion of alcohol consumption in academia

The multicriteria decision-analysis depicted in Figure 1 was published in "The Lancet" (Nutt, King, & Phillips, 2010) and it implies that the most harmful drug (alcohol/ethanol) is completely legal (and even strategically advertised) while psychedelics with the lowest degree of "harm to others" and "harm to users" are classified as the most restricted Class A substances (e.g., Psilocybin/Mushrooms, Lysergic acid diethylamide/LSD). When Professor David Nutt (Edmond J Safra Chair in Neuropsychopharmacology at Imperial College London), who was at this time the government's chief drug adviser, published this dataset he was immediately "sacked" by the government because it conflicted with the prevailing political agenda. That is, scientific empirical facts were simply disregarded in favour of dubious political motives – a clearly irrational decision by the UK government.

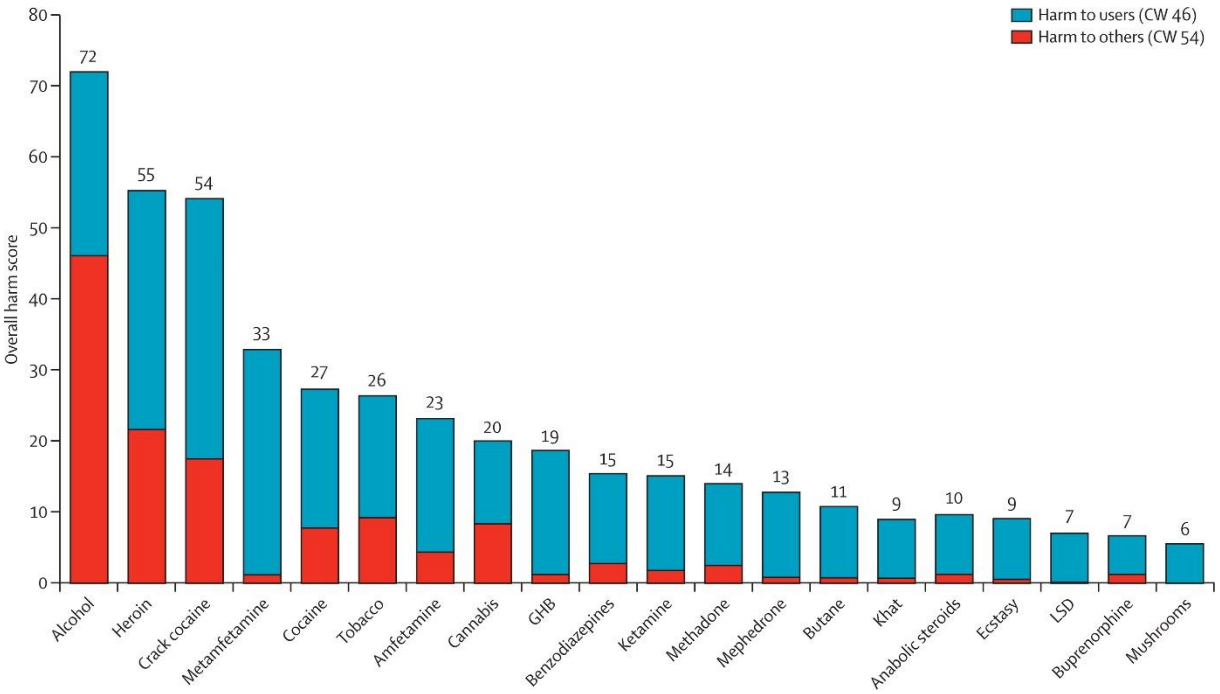

Figure 1. Relative drug harm in the United Kingdom (adapted from (Nutt, King, & Phillips, 2010).

Since then the irrational political situation got much worse. The "Psychoactive Substances Act[1]" (PSA) is a new legal framework which reached Royal Assent in January 2016. The PSA generically prohibits *all* psychoactive (mind-altering) substances besides the most harmful and addictive ones which are of large commercial significance (but see Nutt, King, & Phillips, 2010). At the same time, it classifies relatively harmless substances like psilocybin on par with the most harmful and detrimental substances like alcohol, heroin, and cocaine. This classification is clearly not evidence based and it rests on the easily falsifiable premise that psilocybin has no medicinal value which is evidently not true (but see Bogenschutz & Johnson, 2016). The PSA thereby seriously impedes systemic research on substances which have great potential to alleviate human suffering by treating various psychopathologies and addictions (Bogenschutz et al., 2015; Bogenschutz & Johnson, 2016; Griffiths et al., 2016).

By contrast, alcohol is legal and indeed systematically promoted (using sophisticated and highly effective psychological manipulation techniques) by the evidently harmful and merely profit-oriented alcohol industry and its powerful lobby (Casswell et al., 2016; Hawkins & Holden, 2014). Moreover, it has been argued that the alcohol industry has "vested interests in addiction research" (Mathews, Thorn, & Giorgi, 2013) and it systematically influences political and legal decision making (Hawkins & Holden, 2014). For instance, in 2005 the 26 largest companies globally had net revenue of $155 billion and a total operating profit of $26 billion and it has been argued that little public health research evaluates the impact of its marketing/PR activities (Jernigan, 2009).
Alcohol is very unsafe, causes severe addiction, and all kinds of serious societal problems which are readily observable in everyday life. From a neuroscientific point of view it has been conclusively proven to be neurotoxic (Da Lee et al., 2005; Jacobus & Tapert, 2013) – that is, it kill brain cells! Recent longitudinal research (Topiwala et al., 2017) indicates that even moderate alcohol consumption has detrimental effects on various cognitive functions and numerous neuroanatomical structures (e.g., hippocampal atrophy – that is, it destroys the brain structure which is primarily responsible for learning and memory). *Per contra*, the psychedelic psilocybin has been shown to induce neurogenesis (the formation of new brain cells) in the hippocampus in animal studies (Catlow, Song, Paredes, Kirstein, & Sanchez-Ramos, 2013). Inappropriately, the neurotoxic agent alcohol is widely available at most universities in the UK and campaigns like "Can you explain your PhD in a pub?" are widely advertised to the student population on a national level at numerous universities, unfortunately also at the University of Plymouth as evidenced by the intentionally anonymised email below.

Subject: PubHD Plymouth
Date: Wed, 2 Mar 2016 12:17:41 +0000
From: xxx xxx <xxx@plymouth.ac.uk>

Can you explain your PhD in the pub?

Can you explain your PhD in the Pub?

We are in the process of setting up Plymouth's very own PubhD and are looking for speakers.

[1] For further information see http://www.legislation.gov.uk/ukpga/2016/2/contents/enacted

PubhD events are popping up all over the country. Researchers have the opportunity to give a 10 minute talk about their work to the public, in a pub. Talks are followed by the opportunity for the audience to ask questions. The event will run monthly. The format is three speakers talking about different subjects including the arts, humanities, science and any other exciting research going on in Plymouth.

We are currently enlisting our first speakers. This is a great opportunity to practice presenting your research and communicating it to the public. As an added bonus you will receive free beer (or other drink of your choice)! If interested please contact us either via email (PubhDPlymouth@gmail.com) or twitter (@PubhDPlymouth) and we will get in touch.

For more information about PubhD visit https://pubhd.wordpress.com/

One can only speculate whether this is a coordinated PR campaign instigated by the alcohol industry, but this hypothesis seems reasonable from an economic point of view, especially given the fact that alcohol is an addictive substance. One should not underestimate the power/influence of the alcohol industry on various levels of decision making (Anderson, 2008; Gornall, 2013; Hawkins & Holden, 2014; Lyness & McCambridge, 2014; Mangerel et al., 2014; O'Brien & Kypri, 2008). Moreover, it is highly unlikely that the same "PhD in the Pub" campaign is coincidentally happening at universities in Brighton, London, Leicester, Manchester, Nottingham, etc. pp. The utilitarian question *Cui bono?* (Latin for "to whom is it a benefit?") might be constructive in this respect.

My numerous attempts to address this issue at the administrative level of this university were unfortunately unsuccessful. That is, the "University's Doctoral College Board (DCB)" decided in January 2018 - quote: "*that alcohol consumption was not being encouraged (except insofar as it was available as part of a social occasion)*". The DCB thus admitted that alcohol was frequently freely available at social occasion, but it did not recognise this as problem (cf. Borsari & Carey, 2001; specifically the section on "overt offers of alcohol"). My persistent follow-up attempts which included numerous pertinent scientific resources on the negative impact of alcohol on the student population, peer-pressure, social modelling, and social expectancy, *inter alia*, were unfortunately fruitless. The scientific literature clearly shows that the mere availability of alcohol encourages its consumption, especially when it is freely available! I personally received countless invitations to social gatherings which emphasise that the neurotoxic drug alcohol will be provided (presumably in an attempt to increase the attendance rate). The explicitly admitted psychological association between "sociability and alcohol" consumption is especially problematic from a behaviouristic point of view (e.g., classical and operant conditioning). Moreover, it establishes the social norm (e.g., alcohol expectancy (Young, Connor, Ricciardelli, & Saunders, 2006)) that alcohol consumption is normative in an academic environment (Neighbors et al., 2008). "Corporate responsibility" is an important keyword in this context (Yoon & Lam, 2013). The conclusive literature on the detrimental effects of alcohol on the student population is extensive and beyond the scope of this discussion (for a review see Borsari & Carey, 2001). The university should encourage healthy behaviour and it has an important function in shaping the attitudes and behaviours of its students.[2] Consequently, it is obvious that alcohol should not be made freely available at

[2] From a social psychology perspective, I am keenly aware that 1) challenging authorities and 2) criticising deeply engrained social norms both can have very negative consequences for the person who "dares" to point

social events in an academic environment. Specifically given the fact that alcohol is particularly detrimental to the hippocampus which is the brain structure responsible for learning and memory (Topiwala et al., 2017; Weitemier & Ryabinin, 2003). It follows logically that the negative cognitive effects of alcohol consumption should have significant negative effects of the quantitative meta-level performance metrics of the university (let alone the societal effects) — ergo, it is in the universities own best (financial) interests to reduce the detrimental impact of this neurotoxic substance on its population.

A common index in comparative risk assessment is the "margin of exposure" (MOE), defined as the ratio between the toxicological threshold (defined as the benchmark dose) and the estimated average human intake (Lachenmeier & Rehm, 2015). The MOE indicates a very benign safety profile for psilocybin, especially compared to the neurotoxic agent alcohol which has a very unsafe MOE (Lachenmeier & Rehm, 2015) and has been associated with numerous detrimental neurocognitive (Weitemier & Ryabinin, 2003), genetic, and epigenetic effects (Chen, Ozturk, & Zhou, 2013). Despite these scientific facts, psilocybin is classified as a "Class A"[3] substance in the UK while alcohol is ubiquitously publicly marketed. The PSA thus classifies substances irrespective of their scientific safety profile, for example, as objectively quantifiable by the conventional LD_{50} and TD_{50} toxicity indices. For instance, psilocybin (i.e., O-phosphoryl-4-hydroxy-N,N-dimethyltryptamine) exhibits remarkably low toxicity and the LD_{50} in humans remains unknown, given the lack of any intentional or accidental poisoning death data. The therapeutic window (or pharmaceutical window) is very safe and the maximum tolerated dose (MTD) is very high, i.e., the therapeutic index is very high.

The widespread psychological "propaganda/public relations campaigns" (Bernays, 1928, 1936; Mullen & Klaehn, 2010) in favour of alcohol is a significant contributing factor in the context of this irrational legal situation. The mass-media campaigns against psychedelics (linking psychedelic use to psychopathology and suicide) which were historically initiated by President Nixon's "War on Drugs", have now been evidently debunked (Johansen & Krebs, 2015), even though the public mind is still under its psychological influence. John Daniel Ehrlichman who was at this time Assistant to the President for Domestic Affairs stated in an interview[4] in 1994:

---

these facts out. However, in a scientific environment such well-intended behaviour should be encouraged and not punished. *Sapere aude!*

[3] Class A is the highest category in this tripartite classificatory system.
"Possession of a Class A substance: Up to 7 years in prison, an unlimited fine or both."
"Production and supply of a Class A substance: Up to life in prison, an unlimited fine or both."
URL: https://www.gov.uk/penalties-drug-possession-dealing
Given that psilocybin containing mushrooms are endemic to the UK (e.g., the species *Psilocybe semilanceata* aka "Liberty Cap") this means that picking a psychoactive mushroom which has been safely used by humans all over the world for thousands of years can end in a prison sentence of up to 7 years. At the same time clever designed and artificially flavoured neurotoxic "Alcopops", on the other hand, are systematically marketed to young adolescents (Metzner & Kraus, 2008).

[4] URL: https://harpers.org/archive/2016/04/legalize-it-all/
Interestingly, for some unbeknown reason Ehrlichman's verifiable quote disappeared from the associated English Wikipedia page while it is still present in the German version. However, it can still be found in the revision history of the English page. The internet never forgets:
https://en.wikipedia.org/w/index.php?title=John_Ehrlichman&diff=815523556&oldid=812388832

"The Nixon campaign in 1968, and the Nixon White House after that, had two enemies: the antiwar left and black people. You understand what I'm saying? We knew we couldn't make it illegal to be either against the war or black, but by getting the public to associate the hippies with marijuana and blacks with heroin, and then criminalizing both heavily, we could disrupt those communities. We could arrest their leaders, raid their homes, break up their meetings, and vilify them night after night on the evening news. Did we know we were lying about the drugs? Of course we did."

Well informed legal scholars interpret the PSA as an explicit violation of the right to mental self-determination (i.e., cognitive liberty; Walsh, 2016) – particularly in the context of Article 9 of the European Convention on Human Rights which should protect the right to freedom of thought. It is obvious that freedom of thought is a prerequisite for science. It can be convincingly argued that the PSA reduces neurodiversity, viz., it homogenizes neuronal/cognitive processes and restricts memetic and, ergo, cultural evolution (in analogy with the importance of genetic diversity in the context of biological evolution). *Summa summarum*, the PSA is not evidence-based and presents a serious legal impediment to scientific progress and cognitive innovation (see also Boire, 2000) because it prevents systematic research on neurochemical substances which are natural building blocks of the human brain, for example, 5-MeO-DMT (Shen, Jiang, Winter, & Yu, 2010).

I would like to close this discussion with an apposite quote from William James (who experimented with Nitrous Oxide and the psychedelic Mescaline himself). He articulated in his classic "Essays in Radical Empiricism":
"*To be radical, an empiricist must neither admit into his constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced*"
(James, 1912/1976, p.42).

That is, if science wants to live up to its stated ideal to capture reality in its entirety without leaving any residue, then it needs to integrate psychedelics into its modelling efforts – especially given the fact that many psychoactive alkaloids are endogenous components of human neurochemistry and, ergo, arguably of evolutionary relevance. Any model which incorporates only a specific (selected) subset of the available quantitative and qualitative data is necessarily at best incomplete (and in the worst-case scenario prejudiced, dogmatic, and systematically biased). I am confident that a mature science will sooner or later investigate these naturally occurring endogenous compounds in the context of human psychology. It's just a matter of time… The goal of this brief "manifesto in favour of systematic scientific psychedelic research" is thus to counteract social stereotypes and stigmata and to motivate rigorous scientific exploration of this largely uncharted research area to alleviate human suffering, i.e., addition and depression (Bogenschutz & Johnson, 2016; Carhart-Harris et al., 2016), and to promote a genuine scientific attitude which is necessary for the advancement of science into unknown territory. Scientific integrity and non-conformist critical thinking à la Marie Curie are crucial scientific virtues in this context (cf. Edwards & Roy, 2017).

References

Anderson, P. (2008). Consulting with the alcohol industry. *Drug and Alcohol Review*, *27*(5), 463–465. https://doi.org/10.1080/09595230802263413

Bernays, E. L. (1928). Propaganda. *Horace Liveright*.

Bernays, E. L. (1936). Freedom of Propaganda. *Vital Speeches of the Day*, *2*(24), 744–746.

Bogenschutz, M. P., Forcehimes, A. A., Pommy, J. A., Wilcox, C. E., Barbosa, P. C. R., & Strassman, R. J. (2015). Psilocybin-assisted treatment for alcohol dependence : A proof-of-concept study. *Journal of Psychopharmacology*, *29*(3), 289–299. https://doi.org/10.1177/0269881114565144

Bogenschutz, M. P., & Johnson, M. W. (2016). Classic hallucinogens in the treatment of addictions. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, *64*, 250–258. https://doi.org/10.1016/j.pnpbp.2015.03.002

Boire, R. (2000). On Cognitive Liberty. *Journal of Cognitive Liberties*, *1*(1), 1–26.

Borsari, B., & Carey, K. B. (2001). Peer influences on college drinking: A review of the research. *Journal of Substance Abuse*. https://doi.org/10.1016/S0899-3289(01)00098-0

Carhart-Harris, R. L., Bolstridge, M., Rucker, J., Day, C. M. J., Erritzoe, D., Kaelen, M., … Nutt, D. J. (2016). Psilocybin with pyschological support for treatment-resistant depression: an open-label feasibility study. *The Lancet Psychiatry*, *3*(7), 619–627. https://doi.org/10.1016/S2215-0366(16)30065-7

Casswell, S., Callinan, S., Chaiyasong, S., Cuong, P. V., Kazantseva, E., Bayandorj, T., … Wall, M. (2016). How the alcohol industry relies on harmful use of alcohol and works to protect its profits. *Drug and Alcohol Review*. https://doi.org/10.1111/dar.12460

Catlow, B. J., Song, S., Paredes, D. A., Kirstein, C. L., & Sanchez-Ramos, J. (2013). Effects of psilocybin on hippocampal neurogenesis and extinction of trace fear conditioning. *Experimental Brain Research*, *228*(4), 481–491. https://doi.org/10.1007/s00221-013-3579-0

Chen, Y., Ozturk, N. C., & Zhou, F. C. (2013). DNA Methylation Program in Developing Hippocampus and Its Alteration by Alcohol. *PLoS ONE*, *8*(3). https://doi.org/10.1371/journal.pone.0060503

Da Lee, R., Mi An, S., Sun Kim, S., Seek Rhee, G., Jun Kwack, S., Hyun Seok, J., … Lea Park, K. (2005). Neurotoxic Effects of Alcohol and Acetaldehyde During Embryonic Development. *Journal of Toxicology and Environmental Health, Part A*, *68*(23–24), 2147–2162. https://doi.org/10.1080/15287390500177255

Edwards, M. A., & Roy, S. (2017). Academic Research in the 21st Century: Maintaining Scientific Integrity in a Climate of Perverse Incentives and Hypercompetition. *Environmental Engineering Science*, *34*(1), 51–61. https://doi.org/10.1089/ees.2016.0223

Gornall, J. (2013). Doctors and the alcohol industry: An unhealthy mix? *BMJ (Online)*, *346*(7902). https://doi.org/10.1136/bmj.f1889

Griffiths, R. R., Johnson, M. W., Carducci, M. A., Umbricht, A., Richards, W. A., Richards, B. D., … Klinedinst, M. A. (2016). Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial. *Journal of Psychopharmacology*, *30*(12), 1181–1197. https://doi.org/10.1177/0269881116675513

Hawkins, B., & Holden, C. (2014). "Water dripping on stone"? Industry lobbying and UK alcohol policy. *Policy and Politics*, *42*(1), 55–70. https://doi.org/10.1332/030557312X655468

Jacobus, J., & Tapert, S. F. (2013). Neurotoxic Effects of Alcohol in Adolescence. *Annual Review of Clinical Psychology*, *9*(1), 703–721. https://doi.org/10.1146/annurev-clinpsy-050212-185610

James, W. (1976). *Essays in radical empiricism*. Harvard University Press.

Jernigan, D. H. (2009). The global alcohol industry: An overview. In *Addiction*. https://doi.org/10.1111/j.1360-0443.2008.02430.x

Lachenmeier, D. W., & Rehm, J. (2015). Comparative risk assessment of alcohol, tobacco, cannabis and other illicit drugs using the margin of exposure approach. *Scientific Reports*, *5*. https://doi.org/10.1038/srep08126

Lyness, S. M., & McCambridge, J. (2014). The alcohol industry, charities and policy influence in the UK. *European Journal of Public Health*, *24*(4), 557–561. https://doi.org/10.1093/eurpub/cku076

Mangerel, J., Price, A., Castelo-Branco, P., Brzezinski, J., Buczkowicz, P., Rakopoulos, P., … Tabori, U. (2014). Alternative lengthening of telomeres is enriched in, and impacts survival of TP53 mutant pediatric malignant brain tumors. *Acta Neuropathologica*, *128*(6), 853–862. https://doi.org/10.1007/s00401-014-1348-1

Mathews, R., Thorn, M., & Giorgi, C. (2013). Vested Interests in Addiction Research and Policy: Is the alcohol industry delaying government action on alcohol health warning labels in Australia? *Addiction*, *108*(11), 1889–1896. https://doi.org/10.1111/add.12338

Metzner, C., & Kraus, L. (2008). The impact of alcopops on adolescent drinking: A literature review. *Alcohol and Alcoholism*. https://doi.org/10.1093/alcalc/agm148

Mullen, A., & Klaehn, J. (2010). The Herman--Chomsky Propaganda Model: A Critical Approach to Analysing Mass Media Behaviour. *Sociology Compass*, *4*(4), 215–229. https://doi.org/10.1111/j.1751-9020.2010.00275.x

Neighbors, C., O'Connor, R. M., Lewis, M. A., Chawla, N., Lee, C. M., & Fossos, N. (2008). The Relative Impact of Injunctive Norms on College Student Drinking: The Role of Reference Group. *Psychology of Addictive Behaviors*, *22*(4), 576–581. https://doi.org/10.1037/a0013043

Nutt, D. J., King, L. A., & Phillips, L. D. (2010). Drug harms in the UK: A multicriteria decision analysis. *The Lancet*, *376*(9752), 1558–1565. https://doi.org/10.1016/S0140-6736(10)61462-6

O'Brien, K. S., & Kypri, K. (2008). Alcohol industry sponsorship and hazardous drinking among sportspeople. *Addiction*, *103*(12), 1961–1966. https://doi.org/10.1111/j.1360-0443.2008.02371.x

Shen, H.-W., Jiang, X.-L., Winter, J. C., & Yu, A.-M. (2010). Psychedelic 5-methoxy-N,N-dimethyltryptamine: metabolism, pharmacokinetics, drug interactions, and pharmacological actions. *Current Drug Metabolism*, *11*(8), 659–666. https://doi.org/10.1016/j.biotechadv.2011.08.021.Secreted

Topiwala, A., Allan, C. L., Valkanova, V., Zsoldos, E., Filippini, N., Sexton, C., … Ebmeier, K. P. (2017). Moderate alcohol consumption as risk factor for adverse brain outcomes and cognitive decline: longitudinal cohort study. *BMJ*, j2353. https://doi.org/10.1136/bmj.j2353

Weitemier, A. Z., & Ryabinin, A. E. (2003). Alcohol-induced memory impairment in trace

fear conditioning: A hippocampus-specific effect. *Hippocampus*. https://doi.org/10.1002/hipo.10063

Yoon, S., & Lam, T. H. (2013). The illusion of righteousness: Corporate social responsibility practices of the alcohol industry. *BMC Public Health*, *13*(1). https://doi.org/10.1186/1471-2458-13-630

Young, R. M. D., Connor, J. P., Ricciardelli, L. A., & Saunders, J. B. (2006). The role of alcohol expectancy and drinking refusal self-efficacy beliefs in university student drinking. *Alcohol and Alcoholism*. https://doi.org/10.1093/alcalc/agh237