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Opinion Paper

LEGALISING DRUGS OF ABUSE: THE LE CHATELIER THOUGHT EXPERIMENT

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Abstract

Background: There is currently much debate on legalising some psychoactive materials such as *Cannabis*. This *could* stabilise policing costs, reduce crime, generate tax revenue and control sale by registration of outlets. Such outcomes are valuable, but legalisation may have unintended consequences that are deleterious to society or have no effects on crime or user's health. Here, I propose that behaviour following changes to control of possession and supply may have outcomes that *could* be predicted by the equilibrium law proposed by Henry Le Chatelier. This law *describes a system moving in such a way as to remove the constraints placed upon it*.

Aims: The purpose of this opinion paper is to follow Le Chatelier's Principle (LCP) as a thought experiment to predict the outcomes (products) of drug consumption (reactants) when factors influencing this consumption (conditions) are changed. If this equilibrium law can be applied to human behaviour, it may have value to predict the outcomes of these conditions and assess whether they are positive or injurious. It must be noted that the views expressed here are solely those of the author.

Methods: Pubmed, ScienceDirect, SpringerLink and Google were used for literature searches and "drugs" will be used for drugs of abuse and distinct from medicinal drugs, apart from methadone and heroin (diamorphine).

Results: Applying LCP predicts that drug use may not necessarily decrease, but availability, poor health and criminal activity may increase use. The businesses behind drug treatment and illegal distribution have too much financial incentive to halt operations.

Conclusion: Organisations recommending legislative changes to drug control should conduct thought experiments to horizon scan for unintended consequences, that may be costly and deleterious to society. Governments often focus too heavily on the *evidence base as the sole driver for change*, however, common sense drawn from opinion from these experiments may lead to wisdom.

INTRODUCTION

Why do people take drugs of abuse?

The wide range of natural product drugs (*Cannabis*, fly agaric (*Amanita muscaria*), psychedelic cacti ((e.g., Peyote (*Lophophora williamsii*)), convolvulaceous seeds (*Ipomoea*, *Argyreia*), Betel nut, *Salvia divinorum*, Ayahuasca (*Psychotria viridis, Banisteriopsis caapi*), caffeine (*Coffea arabica*, *Camellia sinensis*) and their myriad effects as stimulants, sedatives, hallucinogens and the *combinatorial consequences* of each of these materials, have made the natural pharmacopoeia an attractive destination for mankind. Some of this attraction could be attributed to medicinal usage (analgesia – e.g., pain killing sedatives - opium), religious practice (euphoria – hallucinogens - Peyote) and social cohesion (empathogenesis – Ayahuasca). Outside of these groupings, the drivers for use are more obscure, less tangible and range from boredom, peer group pressure, environmental conditioning, traditional use, or to a desire to be "different" and "other" from oneself. The key and consistent factor in all drug use is that *consumption of drugs is a lifestyle choice*, with a conscious and repetitive decision by the user to consume, mostly driven by *permission giving thoughts* from the self, or occasionally from those in the user's network.

Drug use has also been attributed to particular socioeconomic classes, but use among the poor, middle and upper income groups appears to have no boundaries and cocaine use [Home Office July 2018] appears to be rising, in part possibly due to lower cost and the belief that this drug is comparatively safe. Unfortunately, rapid changes in blood pressure resulting in aneurysms and heart dysfunction are all too common with this stimulant [Ng et al., 2018; Greve et al., 2020].

The most widely used drug is the stimulant caffeine, being consumed in tea, coffee, yerba Mate, various colas and energy drinks, which have relatively high concentrations of this xanthine alkaloid and are consumed as a "pick me up". Caffeine is generally well tolerated, although high concentrations can cause arrythmias [Kaur et al., 2022; Ou et al., 2022; Maiese et al., 2021] and cases of toxicity in combination with alcohol have been reported [Costa-Valle et al., 2018; Tarragon et al., 2021].

Without doubt the most damaging drug globally in terms of morbidity and mortality, is alcohol [Witkiewitz et al., 2019], causing a plethora of debilitating and life-shortening diseases from cancer [Starek-Świechowicz et al., 2023], liver failure [Singal et al., 2021], heart disease [Roerecke et al., 2014], and diabetes (and the myriad complications that arise from this disease) [Zheng et al., 2018]. Many societies ban alcohol and it is controlled by the majority, for example in the US, one may join the military and fight in a war at 18-years of age, but not legally consume an alcoholic beverage until 21. The control of alcohol and its inherent difficulties are discussed below, but suffice to say, *the ship has sailed* with respect to this particular drug.

What could be done to reduce drug harm?

There is current interest in pursuing approaches in national and global drug policies where countries legalise and regulate or decriminalise drugs of abuse. Such practices superficially have merit as tax revenue could be collected from users and company suppliers [Carliner et al., 2017] and there is also the view that drug associated crime (e.g., acquisitive crime) would fall [Single et al., 2000] and serious organised crime groups (OCG) such as the Mexican Sinaloa and Juarez Cartels, which traffic heroin, *Cannabis* and cocaine, would halt operations after such legislation.

In much of the US and in Canada, *Cannabis* has been decriminalised and businesses have sprung up selling various varieties of *Cannabis* products from leaf, bud, resin, honey oil, crack *Cannabis* and even vape additives. In the US, between 2014 and 2022, $15.1 billion dollars of tax revenue were generated from adult-use *Cannabis* sales, which first started in Colorado and Washington [www.mpp.org 2023].

Such an approach outwardly has much to recommend it; those seeking *Cannabis* as a medicinal material can do so without fear of prosecution; users have some "assurance" as to the quality of materials they are buying from a *bona fide* supplier, who may be regulated through local license; the materials are unlikely to be adulterated with other more potent psychoactive agents such as synthetic cannabinoid receptor agonists (SCRAS); and there is containment of supply, where law enforcement know precisely who is selling materials, where they are located and who is paying the tax.

There is also the approach adopted by some societies of a total ban on narcotic materials with highly severe consequences for breaking the law such as capital punishment [https://hri.global/wp-content/uploads/2023/03/HRI_DeathPenalty_Report2022.pdf]. However, does this reduce harm to users and society as a whole? Curtailing a supply chain by removing a small number of its members is a temporary solution as the financial rewards are enticing and in poor environments, even compelling. This behaviour is seen with coca farmers who can make far more revenue from producing coca paste than growing food crops, and the risks associated with capture in remote areas is in the favour of reward.

MATERIALS AND METHODS

The PubMed, ScienceDirect and Google search engines were used to acquire primary and secondary literature, which included the search terms the “war on drugs” and “drug decriminalisation”.

RESULTS AND DISCUSSION

The “war on drugs”

This term is frequently used by policy makers and the media in an attempt to describe to the general public the organised crime-driven process of drug supply and the efforts made by government (spending the general public’s tax) on dealing with this issue. The term is unhelpful and a common trope, to imply or suggest that drug use and spread can in some way be stopped as *wars can be won*. As seen above, the drivers for drug consumption are myriad and lifestyle choice led. If drug use is chosen by a small percentage of society, there is no war that can be won as it is an intrinsic part of that society that cannot be removed or reduced without *significant individual behavioural change*. Given the time frame of human drug use and its apparent societally inherent nature, it *may be a behaviour that cannot be fully removed and fought*. It might be that drug use is a continuous negative part of the human psyche, like crime, that should be acknowledged as such, but not pandered to.

The assumption used by governments is that global drug use can be stopped and that funds should continually be funnelled into treatment programs, law enforcement and pharmaceutical companies offering a “solution”, for example methadone. This *trinity* of the *drug treatment establishment* possesses considerable socioeconomic and financial power, and one can see why it has a vested interest in extending and developing new initiatives to help and perpetuate the “war”.

The war ideology is like any other extreme ideological political doctrine, where proponents say that examples of societies that adopted this doctrine only failed and led to bloodshed because the ideology was not approached with *enough zeal* or *not done properly*. Human nature does not globally change, and the phony war on drugs should be acknowledged for what it is, and the best that can be achieved *is not doing further damage to the individual or society*. However, the author is in no way saying that people cannot change their choices for the better. In his superb book Romancing Opiates, Theodore Dalrymple observed from his medical practice some patients who just got fed up with drug taking and quit [Dalrymple 2006]. The reasons for this may be complex or trivial, but the starting point should be that *drug use is a lifestyle choice* and putting the blame on society (environment) is a lazy construct, which can be refuted by pointing out that drug use is classless.

Taking drugs is a lifestyle choice.

Whilst there are many reasons why an individual may feel predisposed to consume a psychoactive substance, the type of drug and how it fits within the user’s life is a choice. The reward that each drug offers, from the mild stimulation of caffeine to the seductive sedation of heroin, or the highly addictive and sense enhancing methamphetamine, will have an impact on that choice as will the complications associated with consumption. For example, for heroin, it takes serious motivation to source the drug, dissolve it is a suitable mild acid to enhance the solubility by salt formation, to filter out any excipients from some cotton wool into a syringe and then to *repeatedly* inject that opiate, starting with a low dose and increasing until tolerance results. This motivation is significant, given that a user does not know the strength of the materials, or whether it has been adulterated with a far more potent opiate (e.g., fentanyl). Other deterrents include the risk of sepsis (which is on the rise) or HIV from the materials, or cross contamination with another user’s blood respectively. The implications of this motivation *must weigh heavily upon the user’s mind* and be an order of magnitude greater than methamphetamine use

and several thousand orders of magnitude greater than the cup of Earl Grey tea. Of course, motivation is driven by addiction pathways, which can be highly significant.

It is also naïve to believe that users are not aware of the considerable disruption and destruction their habits reek on their lives and on those of their friends and family. YouTube videos abound of "before and after" images of the damaging effects of methamphetamine on a user's physical appearance. The same is true for heroin, with many users being thin, cadaverously grey, unkempt, agitated following comedown and driven and highly motivated for the next dose. Even with examples of limb amputation following sepsis, some users continue their downward spiral, unable to break the cycle of *permission giving thoughts*, network and use routine, all of which *are still unfortunately a conscious lifestyle choice*.

The alcohol ship has sailed

Alcohol is often "wheeled out" as an example of where legalisation and registration (licensing laws) can be implemented to procure tax dollars and allow individuals access to this ancient psychoactive substance. However, recent WHO guidance on consumption has indicated that there are no safe levels of weekly unit intake and this drug is by far the most deleterious with over 13 deaths per 100,000 people in England in 2020 [www.nuffieldtrust.org.uk]. Indeed, if alcohol was a new "food" and being evaluated by government advisors, it is highly possible that it would be a controlled substance in drug legislation and not have our current age-related control. However, given its long history of use, the revenue generated from its sale and that experiments to control its consumption failed (e.g., prohibition in the US), *the alcohol ship has well and truly sailed*.

Illicit sources are still regularly found in the UK, where people either produce their own and sell it or smuggle large quantities (most notably spirits) to avoid duty payments. These sources are not without risks and there are examples of adulteration with methanol [Roldán et al., 2003], anti-freeze and accidental contamination with toxic materials such as heavy metals [Lachenmeier (2020]. The market for cheap alcohol exists and there are those prepared to provide for this.

Using alcohol, the most problematic drug of abuse globally, as an example of how other drugs can be legalised and controlled to generate revenue and improve the quality of recreational drugs consumed, has an obvious moral dilemma associated with it. Can one extrapolate alcohol use with other drugs?

Should we follow the US and Canada with Cannabis?

Public pressure in both countries ultimately led to allowing the sale of *Cannabis* from licensed sources, and as mentioned above, resulted in significant tax revenue. This process may have been driven by widespread recreational use (many north Americans have and continue to use this drug) and a significant lobby claiming medicinal properties of this material, where there are some significant data to substantiate use.

However, *Cannabis* is invariably smoked or vaped and the dangers of ingesting pyrolysis products of organic natural products are well known, particularly in combination with tobacco [Underner et al., 2014]. There is a common view that *Cannabis* is a harmless material and the risks of mental health issues, particularly schizophrenia [Ortiz-Medina et al., 2018] are often overlooked. Given the relatively recent relaxing of *Cannabis* control in North America, it is too early to dissect the resulting effects of widespread consumption, although this author predicts a burgeoning mental health deterioration amongst users in the US and Canada in the 2030's, with potentially a review of *Cannabis* accessibility conducted by authorities at that time. Unfortunately as with alcohol, the *Cannabis* ship may well have sailed by that time.

Does methadone help or hinder the route to opiate abstinence?

Hailed as an option to substitute opiates since the early 1970's, the synthetic drug methadone has been used widely in global drug treatment programs in an attempt to "normalise" a heroin user's life. The rationale is that methadone has a longer half-life, spreading opiate effects over a longer period and "smoothing" the pharmacology, so that a user may not experience the cravings of heroin withdrawal. Known as methadone maintenance therapy (MMT), this process has some degree of poor compliance [Gong et al., 2023], but a Cochrane review has highlighted that methadone can reduce heroin use in those who are dependent, and keep them in treatment programs [Mattick et al., 2009].

Of course retention in programs is only valuable if the goal is to become and remain abstinent for optimal patient health.

In the UK, methadone is dispensed in a pharmacy and the user may be required to consume the oral prescription on site in the presence of a pharmacist, normally in a consultation room for confidentiality. The process is often described as *opiate substitution treatment* (OST), with the view that a user can disconnect from their heroin supply network, reduce acquisitive crime and hold down a normal enough routine to apply for employment. In England and Wales in 2021, 663 deaths involving methadone were registered, which was significantly higher than the previous year [ONS 2021]. A survey of Coroner's Prevention of Future Death (PFD) reports from 2013 to 2022 found that opiates were involved in 219 deaths and showed that methadone (23%), morphine (29%) and diamorphine (16%) were the most commonly implicated opiates [Dernie et al., 2022]. Are consumers taking methadone and heroin together? Some analyses show that this is the case [Kleinman and Sanches 2023]. Indeed it is widely accepted by many community drug teams that the *clients* to whom they provide methadone are concomitantly using heroin. To that end, their intervention could arguably be seen as *opiate supplementation treatment*. Indeed, the majority of drug deaths in Europe are due to the toxicity associated with multiple consumption [EMCDDA 2021].

The rationale for methadone use by community drug service treatment providers is that their clients respond well to methadone (they need less heroin), there is less risk of microbial infection or sepsis from illicit use and that they are not driven to acquisitive crime to fund their habit. This crime reduction element is often used by politicians as a valid argument for supporting methadone in treatment programs. However, this is a somewhat morally dubious contention with a user holding society to ransom: "if you don't give me my methadone, I will shoplift and steal from the vulnerable". Such a stance is like this author threatening to mug a pensioner to support his substantial red wine and steak habit.

Recent developments in treatment have included the use of pharmaceutical grade heroin (diamorphine) itself, rather than methadone, to provide a cleaner source of drug (rather than street heroin) that could be used in a state funded clean space with sterile ware in situ. This process is known as heroin assisted treatment (HAT). Users are given diamorphine up to 120 mg bd with or without methadone, in an attempt to reduce reliance on street heroin (and the risks associated with this), reduce acquisitive crime and normalise the user's routine, in the hope that they will have the desire to ultimately reduce heroin consumption to zero and adopt a more regular routine leading to employment.

HAT and MMT should be time limited, so that they do not become "state-sponsored addiction", which is neither healthy for the individual nor society as a whole.

The author is at a loss as to how providing a drug or a drug that can be added to heroin to extend its use, actually helps a user "kick the habit" and change their behaviour. Despite the popular view that heroin withdrawal is a terrible trial, the reality, as conveyed to the author by a senior Clinical Toxicologist who has supervised many detoxification procedures [Bradberry 2023], is that if the user is committed to abstinence as their goal, the course of detoxification is relatively benign, within typically 2-3 days. However, managing the psychology around coping with withdrawal from heroin can provide a substantial clinical challenge. *No one ever died from heroin withdrawal* – the same however, cannot be said of alcohol withdrawal, which can lead to potentially fatal delirium.

Community drug service treatment providers obviously have a vested financial interest in maintaining the status quo. There appears to be the view amongst these groups that the needs of an individual outweigh those of the community.

Spock was right – the needs of the many outweigh the needs of the few

In MMT and HAT, there *appears* to be the view that the needs of the "client" are of paramount importance and are more pressing/valuable than those of society. This approach is also seen in the recent cultural changes in the West, often referred to as "woke ideology", where the feelings (and needs) of an individual dictate a societal/cultural narrative, whether that is gender, race, politics or ideologically driven [Murray 2022]. This has obvious impact on how an individual can react to expressing their drug use and their resulting feelings/needs. Individuals now use "offence" politics,

where they can control a narrative (and a policy direction) by saying that something may cause them upset and conflict with their needs.

This is a dangerous and potentially destructive ideology that could impact drug policy and treatment. No-one has the right to go through life without being offended, as open discourse between individuals must have a risk of offence or no progress will be made in thought, and concepts will not challenge views and remain vacuous, nebulous, inoffensive tropes. In all areas of life, there is no gain without pain, whether the "pain" be offence or moral/mental/physical development.

Should it not be more prudent to *prioritise detoxification and support abstinence* rather than addiction treatment programs? The argument that they offer value for money and reduce the greater costs associated with treating users in hospitals and reduce drug-related crime has been used, although the author has been unable to acquire the total UK costs that include treatment groups, pharmaceutical usage, hospital, law enforcement and coroner's costs. These are the true burden on the tax-payer and not just the budget that goes to treatment groups within geographical regions from government.

How did we arrive at a place where the needs of the user dictate treatment policy? Societal needs are clearly to reduce the burden that users place on resources by their behaviour and expense. Why should society spend so much money on something that clearly is a lifestyle choice? The argument that alcohol (and tobacco) causes more deaths than other drugs and that society already readily picks up this burden is often used (and revenues could be collected by legalising and registration of drugs). However, will such legalisation and registration have better outcomes for society than we currently have? Is there a significant possibility that wider legalisation and registration and a tolerance to drug use will have unintended and damaging consequences to both individuals and society?

Le Chatelier – the thought experiment

The postulate that "Nature abhors a vacuum" is attributed to Aristotle, who studied the movement of things into voids, including gas into a vacuum. His view was that vacuums are transient unnatural phenomena. The term could also be applied to some areas of human behaviour and society in general, for example, the imposition of laws that lead to the lack of something e.g., the prohibition of alcohol, creating a vacuum of need. This prohibition law had the unintended consequences of widespread illegal distribution and consumption of alcohol in the US, leading to an increase in organised crime. This particular example could also be described as *the law of unintended consequences*; introducing legislation that *seemingly should act for the greater good*, but in reality *introduced other harms to society*. The vacuum of need was created and nature (in this case organised crime), rushed in to fill this void. Can the obverse be true? Is it possible that legalising a drug could lead to similar harm by an unforeseen consequence, with something else rushing in to fill Aristotle's vacuum? Our experience of cause and effect tells us through common sense that this is likely.

To investigate this, a more complex and profound descriptor can be found with the physical chemistry concept of Le Chatelier's Principle [Le Chatelier, 1884] being applied to human behaviour, societal reaction and the resultant *product* of legislation following legalisation and registration of drug use and distribution. Henry Louis Le Chatelier (1850-1936) was a French Chemist who demonstrated that changing conditions (pressure, temperature, catalysis) had profound effects on reactants in a chemical equilibrium with their resultant products. His principle was that *a system will move in such a way as to remove the constraints placed upon it*. This is an extension of Aristotle's observation, in that if a reduction in pressure (vacuum) is applied to the gaseous product side of a chemical equilibrium, the void (vacuum) will be filled by more product. The product will fill the vacuum as the system moves and removes the constraints placed upon it (Figure 1). This figure has a larger arrow to the right indicating that the equilibrium is in favour of the production of product, in this case due to changes in pressure, temperature and the addition of a catalyst.

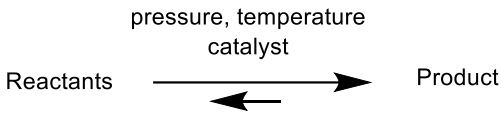

Figure 1. A simple chemical reaction with various conditions

Can such a chemical equilibrium law be applied to human behaviour in terms of drug use? Can this law be used to predict what changes in legislation will have on acquisitive and organised crime and licit and illicit supply?

If drug consumption is seen as a chemical reaction controlled by Le Chatelier's Principle where heroin, *Cannabis*, cocaine and consumers are the reactants, can this help us to predict what the outcomes (product – the effect on society) will be if the reaction conditions, *the constraints*, (legislation, drug treatment programs, severe sentencing) are applied? If we describe the process of drug consumption from start to finish (production, shipment, distribution, use, treatment), could removing a constraint e.g., legislation to decriminalise *Cannabis*, change the outcome on society (product)?

As part of the thought experiment, the supply of cocaine, heroin and *Cannabis* into the UK can be examined (Figure 2). If these drugs plus the consumers are the reactants, how do changes (D) in a variety of constraints (catalysts/conditions) (e.g., decriminalisation, legalisation, law enforcement, legal sale/registration, drug treatment programs, media/social media, cost, availability, perceived health benefits/risks), either increase or decrease (D±) the outcomes (products)?

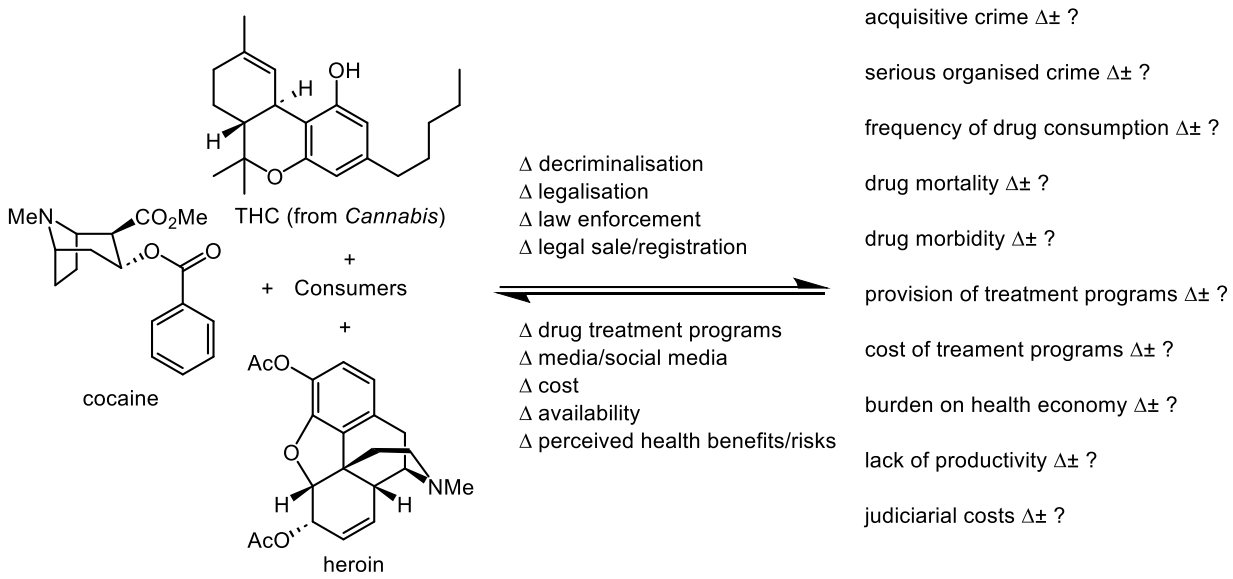

Figure 2. Some predicted outcomes (products to the right) produced by constraints (catalysts - above and below the double arrow) on various drugs and consumers (the reactants). Can Le Chatelier's Principle (LCP) allow pridiction of outcomes from changing constraints? Can LCP be used to avoid unintended consequences?

The UK drug market is approximately £9.4 Billion per year [Black, C., 2020] and older data from 2014 estimates that the global illicit drug market is between US$426 and US$652 billion in value [May, C. 2017]. These figures are a considerable incentive to all stages of the production and supply process. If these three drugs of abuse were made legal, would the serious organised crime groups (SOCGs) that supply illegal materials disappear? Would the Guadalajara, Sinaloa, Juarez or Tijuana Cartels pack up business and move into a less lucrative but legal operation? The idea is mildly preposterous and application of Le Chatelier's Principle suggests otherwise. They would move in such a way as to remove the constraints placed upon them and the equilibrium may either remain intact or shift to the right, impacting any number of outcomes with possibly unforeseen consequences.

What could this mean for the UK? If *Cannabis* use/possession was decriminalised and its dissemination "controlled" by registered outlets (as is the case in the US and Canada) as an example, free market economics may drive the Cartels to lower their prices of *Cannabis* products. They may also "diversify/valorise" their drug portfolio through the sale and distribution of more exotic cannabinoids (which do exist and are used to a lesser extent), including synthetic cannabinoid receptor agonists (SCRAs), which are currently controlled in the UK by the 2016 Psychoactive Substances Act. For the original natural product materials, the market would be flooded by cheaper products (crack/honey *Cannabis*, resin, herb and multiple varieties with different purported effects) compared to those sold through licensed outlets, again supporting the Cartels business. Illegal importation into the UK would continue, as it does for tobacco and alcohol. SOCGs would continue to operate by finding ways to service the user's needs and continue to generate revenue *and the equilibrium would adjust to compensate for changes in legislation*.

If an individual is no longer at risk of criminalisation from possession and use of *Cannabis*, or even licit production from growing *Cannabis* at home, would this increase *Cannabis* use among the population? Given how easy *C. sativa* cultivation is, it is probable and plausible, with no need to subject a user to scrutiny at outlets at purchase. "Grow your own at home" may have considerable appeal to the General Public without the risk of police intervention.

The *Cannabis* experiment is in part being conducted in the US and Canada at present, where legislation has been introduced to allow legal sale at registered shops, generating significant tax dollars for the government of both countries. However, it should be noted that the illegal import of *Cannabis* into the US from Canada still remains strong with illegal seizures of *Cannabis* up 900% with 70,823 pounds of Canadian *Cannabis* seized during the year ending the 30th of September 30, 2021, [https://www.canada.ca/en.html , 2022]. This is an enormous increase from the 6,446 pounds confiscated in 2018-19 when the *Cannabis* bill came into effect.

For some considerable time there has been an interest in the use of medicinal *Cannabis* for multiple diseases [Breijyeh et al., 2021; Legare et al., 2022], including pain (from cancer, arthritis, ankylosing spondylitis), multiple sclerosis (to reduce spasticity) and more recently to treat paediatric epiplepsy (Dravet, Lennox-Gastaut Syndrome). Such public interest prompted the UK Government to commission a workgroup to investigate medicinal *Cannabis* products. It must be emphasised that evidence based clinical trial data on certified pharmaceutical quality products that have undergone rigorous standardisation, is *the only source for reliable medicinal claims*.

The literature on adverse effects of recreational *Cannabis* use is sizeable with this material accompanying other drugs in toxicological reports on drug deaths [Rock et al., 2022]. There are also examples of a single use of *Cannabis* leading to psychosis [Volkow et al., 2022] and in severe cases patients have been sectioned under the Mental Health Act. Given the easier availability of this drug in the US and Canada, instances of poor mental health (schizophrenia, depression) are highly likely to increase. The examples above of increased illegal importation and an increased likelihood of poor mental health, could be considered as examples of Le Chatelier's principle resulting in unintended consequences.

Whilst heroin and cocaine are unlikely to be decriminalised in the UK and sold through registered outlets due to the profound and rapid onset of effects that these materials have, there has been interest in the provision of areas (so-called "shooting galleries") where consumers have a safer and cleaner environment and access to new sterile ware (syringes/needles/preparation materials), to improve consumer safety and reduce sepsis/infection risks.

If heroin was more widely prescribed freely on a regular basis by a practitioner to improve user health and remove acquisitive crime, what effects would this have? Apart from the enormous costs associated with this process, the fact that many heroin consumers live a chaotic life and are unable to make appointments to drug treatment programs, the illicit supply would continue by offering materials 24-hours a day, with delivery (suiting a chaotic lifestyle) and with a far larger choice of materials than just heroin. This increase in choice could include synthetic opioids of varying effects that are controlled by the Misuse of Drugs Act.

Cocaine use sits in between *Cannabis* and heroin. It has become popular amongst certain societal groups, such as the middle class and its image as the drug of choice for professionals on a Friday/Saturday evening has found its way into popular culture, despite the considerable health risks associated with it (e.g., cardiac arrythmias and hypertensive crises).

Is education on the perils of drugs of abuse a waste of time?

Several colleagues have told me that the evidence base for drug education having a significant impact on an individual's decision to take drugs is limited. However, are the grim realities of drug use "gone wrong" truly displayed to our youth? How many School students have seen a video depicting a brain dead patient, whose heart still beats but is lost to their family, except for organ transplant? How many students have heard of *Cannabis* users who have been sectioned for mental health issues? Do students know that cocaine and stimulant use can result in heart damage and the need for a pacemaker? Have our students really been made aware that what they are being sold is of dubious pedigree and may have been adulterated by materials ranging from the innocuous such as sugar to highly potent veterinary drugs such as carfentanyl? The brutal revelation of such outcomes *must* have some impact on a young person's decision to take drugs of abuse.

In a society that now has "trigger warnings" in lessons and lectures so as not to upset some in the audience, this author highly doubts that students are shown the disturbing, dangerous and life changing consequences of drug consumption – the grey cadaver on the hospital bed following opiate overdose. This is in essence part of the problem with some current western education – *facts don't care about your feelings* [Shapiro, S, 2019] and liberalism results in freedom of choice, but an unwillingness to take responsibility for the outcomes. One could argue that this is what governments want – the populace to rely on government to solve societal problems, when in reality, the responsibility is that of the individual and not the collective. In education, the *short sharp shock* is valuable and memorable and the tenet of drug education should be similar to the "first do no harm" of young doctors. *Do no further harm*.

CONCLUSIONS

There is no "war on drugs", just a steady stream of users and governments, enforcement and treatment programs reacting to this use. The term "war on drugs" is used widely by governments, bureaucrats and enforcement agencies to convince the general public that the "war can be won" and drug use eradicated, but the reader is urged to look at the history of psychoactive drug use and how prevalent it is globally, even with legal drugs such as alcohol and tobacco.

Drug use occurs across many different areas and socioeconomic groups of society and is *a lifestyle choice and not a disease*. Consumers choose to consume and the urgency of consumption is related to the reward that each drug "gives" to an individual's central nervous system. This can range from the mild desires for a cup of coffee or tea through to the soul sapping, relentless pursuit of methamphetamine, heroin or alcohol to alleviate the craving.

Behaviour has consequences and society must recognise that the individual must decide that they no longer wish to consume and seek help leading to abstinence. Society must empower substance misusers that they can be different and that recovery is a realistic possibility if they apply themselves. The aim must be recovery. Some treatment teams at present are endorsing the concept that addiction is a lifelong disease that cannot be recovered from and that methadone/heroin helps. However, users who have been taking methadone for 10 years or more are not free from addiction and substitution therapy is morally questionable. This is pertinent in coroners' reports listing methadone in combination with heroin in toxicology reports, clearly showing opiate supplementation rather than opiate substitution.

The end goal of any treatment program *must/should* be abstinence *within a reasonable time frame* and this can only be achieved if the consumer takes responsibility for their actions and treatment teams do not endorse addiction as a lifelong disease.

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