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The 'natural high'
Altered states, flashbacks and neural tuning at raves[1]

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Since its emergence in the late 1980s, the subculture referred to as 'rave' has become a significant global youth phenomenon. The electronic and rhythmically repetitive nature of the music, the long hours of dancing, the semi-legal secret location and the ingestion of psychoactive substances are what distinguish raves from other youth parties. When combined, these features are designed to promote feelings of connectedness, spirituality and the state of ecstasy among participants. Though members of this subculture can be identified through their choice of music, jewellery and clothing, recent media attention has made the raver's selection of drug the most salient indication of subcultural belonging. In Canada, this relationship is particularly apparent in the recent initiatives that have taken place to restrict rave events.[2] Bylaws that now limit legal raves to establishments meeting the outlined specifications for ventilation, emergency exits and running water are designed to safeguard ravers from the harmful effects of MDMA (3,4-methylenedioxymethamphetamine) and other popular designer drugs.[3] Similar harm-reduction strategies have appeared worldwide, resulting in a continuously evolving scene where the defining boundaries between raves and nightclubs have begun to blur.

While the notion of 'locale' no longer adequately distinguishes raves from other dance events, the subculture's most prevalent drug, MDMA, also referred to by ravers as 'E', 'XTC' and 'ecstasy', has become a demarcating feature of the subculture, at least in the Canadian rave scene. The centrality of MDMA to the rave scene is apparent in the number of publications which have incorporated 'ecstasy' into their titles, including *Clubbing: Dancing, Ecstasy and Vitality* (Malbon 1999), *Generation Ecstasy* (Reynolds 1999) and *Ecstasy: Dance, Trance and Transformation* by (Saunders 1996a). The underlying presence of MDMA and its influence on the subculture are also evident at many levels. A number of accessories which have become symbolic of raving are connected to the physiological effects of ecstasy: glow-sticks enhance the visual, and Vicks Vapo Rub the tactile effects of MDMA, while suckers and baby soothers (dummies) alleviate the drug's side-effects of bruxism and jaw tension. Additionally, bottled water and the designated 'chillout' areas at events reduce overheating and dehydration, effects which can have fatal consequences on ecstasy users (see Kalant 2001; Malberg and Seiden 1998). Accessories such as infant hair barrettes, 'kiddie' backpacks, teddy bears and friendship bracelets have

been correlated with MDMA's ability to stimulate an innocence reminiscent of childhood; it was the drug's ability to bring out one's 'inner child' that gave it the nickname 'Adam' in the late 1970s, when psychologists realized its potential in therapy sessions (Reynolds 1999:82). Even PLUR (peace, love, unity and respect), the acronym that has been referred to as the principal philosophy of raving (Fritz 1999:203), an ideology that is intended to reflect the love and connectedness of the rave community, can be traced to the empathogenic[4] effects of MDMA.

To date, the majority of publications on substance use at raves focus on the escalating presence of drugs at events and the associated health risks, the range and quantification of illicit substance use, polydrug use and strategies for harm reduction. The subjects employed in these studies generally exhibit overrepresentation by habitual drug users, with the varying categories of rave participants overlooked. Further, these studies fail to delineate the motivations, experiences and attitudes of regular drug users, as well as those of occasional consumers and abstainers. Consequently, a wide range of data has been missed. While MDMA's connection to the rave culture is undeniable, it should also be noted that a reactionary trend to the emphasis on drugs has begun to take place as an increasing number of participants choose to abstain or to reduce or limit their consumption of illicit drugs. Fieldwork in the central Canadian rave scene has suggested that ravers' attitudes toward drugs do appear to contradict their otherwise focal position as portrayed in the literature. Analysis of participants' views concerning drugs suggests that an underlying code of 'acceptable' behaviour with respect to drug use has not only influenced participants' choice of drug, but also fostered the development of an underreported class of rave participants—those who limit their consumption of drugs and those who discontinue use altogether.

Drawing on recent studies of the flashback phenomenon, in addition to Gellhorn and Kiely's work (1972) on autonomic nervous system tuning, I suggest that exposure to a psychoactive substance at a rave can produce neural tuning such that a similar state can later be reached 'naturally' while in the rave environment. Further, some participants are in fact aware of this, and it is the effect of this process which motivates this underreported pattern of drug use.[5]

'Dance drugs' and raves

The appearance and increasing popularity of designer drug use among youth populations has been reported in many countries around the world, and Canada is no exception. Reported ecstasy-related deaths (see Kalant 2001; NIDA 2000), records of designer drug-associated emergency room visits (see NIDA 2000), police reports on drug seizures *(ibid.),* in addition to a small body of published literature (CAMH 2000; Adlaf and Smart 1997; Weir 2000), suggest that synthetic drug use is clearly on the rise in Canada. MDMA-related deaths have been the most prominent measuring stick used to gauge the influence and popu larity of raves and dance drugs among Canadian youth; however, quantitative reliability is often confounded by the fact that 'ecstasy' pills may be combined or even replaced with

other substances. Polydrug use, a common pattern of behaviour among ravers (see Adlaf and Smart 1997; Boys *et al.* 1997; Forsyth 1996; Pedersen and Skrondal 1999; Topp *et al.* 1999) presents another factor contributing to the inability to operationalize the content and dosage of substances ingested and the specific cause of drug-related deaths. These circumstances also fail to elucidate general patterns of use since the majority of serious cases demonstrate blood levels 40 times higher than the average recreational dose (Kalant 2001:924). Overheating and dehydration are additional factors that complicate the epidemiological data. Post-mortem analyses of ecstasy-attributed deaths suggest that many cases are the result of hyperthermia rather than the direct toxicity from MDMA (Measham *et al.* 1998:25). Much of the literature in the Canadian context has also relied on data obtained from samples directed toward the secondary-school population (see Adlaf and Smart 1997). These patterns of use cannot be generalized to the rave population as a whole, however, since most rave attendees fall into the post-secondary age bracket. For example, our survey results revealed 62 per cent of ravers to be over the age of 20 (Takahashi and Olaveson 2003).

Our study also found that psychoactive substance use was prevalent among those sampled: 81 per cent reported regular drug use at raves, 6 per cent reported occasional use and 13 per cent indicated that they abstain *(ibid.)*. While a variety of substances were reported, ecstasy was the most frequently reported substance, at 67 per cent, followed by cannabis and crystal methamphetamine *(ibid.)*. Ecstasy, LSD (Lysergic acid diethlamide) and the amphetamines appear to have the most consistent international presence. A number of other studies illustrate that regional variation exists in the patterns of drug use at raves. For example, Power *et al.* (1996) cite MDMA, LSD and amphetamine sulphate as the drugs of choice among a group of London youths examined. Amphetamine and MDMA use are also cited as the drugs of choice by Forsyth (1996) in the Scottish dance scene. Forsyth lists nitrates or 'poppers' with amphetamines and ecstasy as the most prevalent drugs among London youths, whereas 'poppers' seem to have a very minor presence in the Canadian rave scene to date. In our own study, references to a homemade concoction referred to as 'peach' were reported only by survey respondents sampled in Quebec.[6]

Weir (2000) and Weber (1999) note that alcohol use at Canadian raves is low, attributing this to the fact that, while it loosens inhibitions, it can also generate aggression amongst participants. For this reason, the general view among ravers is that alcohol has no place in the scene. Our survey data also confirmed this. According to one 22-year-old male, 'having alcohol there changes everything, I've seen a lot more people get sick and lose control from drinking—at raves there's a lot less incidents of people getting sick or hurt'. Females also attributed the 'non-sexual' atmosphere at raves to the absence of alcohol and felt this to be a positive feature of the rave environment.

Attitudes toward drugs: a 'moral' code of conduct?

Centrality of the music, dance and people

The position of the rave community toward drugs tends to be an ambivalent and paradoxical one. Psychoactive substance use is undeniably widespread among the rave population; survey results suggested that the majority of individuals who attend raves use drugs in this context or have done so in the past. At the same time, however, respondents emphasized that the rave experience and culture is fundamentally about the music, the people, the dancing and PLUR, rather than the drugs. Those who attend raves for the sole purpose of buying and ingesting psychoactive substances were perceived by some as 'phoney' ravers who frequent events for the wrong reasons (see also Lenton and Davidson 1999; Weber 1999). As one 18-year-old male states:

> I don't use drugs, I don't believe they are necessary I think they make your night fake. Sadly it's necessary for some people, but to each his own. I just don't like people who don't have a clue about music, just use the venue for drugs.
>
> (18-year-old male)

Individuals who rave 'clean' were even admired for demonstrating a greater commitment to the music and the culture. According to one 18-year-old female informant:

> Even though I usually dose at raves, I really respect people who can rave without drugs because these people are really devoted to the music, I mean they can get high just from the music and the dancing and that's pretty cool.
>
> (18-year-old female)

Some ravers were aware of the shift in mental state that can result from prolonged dancing. As one 24-year-old male stated:

> I can have the same response whether taking the drug or not. In fact even better, there are times when I will go and dance for 15 hours straight and feel like I'm brought to a state of consciousness on par if not greater than those who had popped 15 pills.
>
> (24-year-old male)

The sentiment that these naturally induced altered states embody the core principles of the culture is illustrated in the following raver's statement: 'But there is the respect, the liberation, the space to simultaneously be an individual and part of a group. This natural high, not the chemical sort, is the true allure of a rave' (Park 2001). These attitudes are consonant with the finding that only 8 per cent of the

subjects we surveyed mentioned drug use as the primary reason for attending raves, compared with the 92 per cent who referred to either the people, the music or dancing as the main attractants (Takahashi and Olaveson 2003). This finding is supported cross-culturally as two-thirds of Australian ravers surveyed by Lenton and Davidson deemed the music, lighting and dancing to be the primary appeal of raves (1999:154). Similarly, van der Wijngaart *et al*. concluded that in The Netherlands psychoactive substances are only part of the larger rave context, with music and dancing having the dominant appeal (1999:701).

The philosophy of the rave subculture—peace, love, unity and respect—is then thought to take precedence over drugs, with some ravers attributing what they refer to as the degradation of the scene and its *vibe*[7] to the increased availability and consumption of drugs at raves (see also McCall 2001; Lenton and Davidson 1999; Reynolds 1998; Weber 1999). While some informants were troubled over the decreasing quality of psychoactive substances and the introduction of novel street drugs such as 'special K' (ketamine) and GHB (Gamma-hydroxy-butyrate) into the scene, others expressed concern over the effects of drugs on young participants (see also Lenton and Davidson 1999; Weber 1999). Some felt that young, inexperienced ravers are more susceptible to the dangers of polydrug use and overdose. As one raver observes: 'I see more and more irresponsible kids e-tarded out on the floor. You know it when you see it. Blatant drug use is starting to get out of hand' (cited in McCall 2001:121). For this reason, recent bylaws and safety regulations were welcomed by some as a positive step towards harm reduction. In reference to the presence of security and law enforcement at raves, one 22-year-old male stated: 'I'm all for it and I appreciate it, it's reassuring to know that there's people there to help you.' In Canada, the rave community has also taken measures to address these safety concerns, as harm-reduction organizations such as OATS (Ottawans Actively Teaching Safety) and TRIP (Toronto Rave Information Project) are managed by volunteer ravers, and the presence of these groups at raves is viewed as positive and non-threatening by most rave-goers. The appearance of 'Smart Bars' at raves offering fruit and natural energy-boosting drinks for sale further provide participants with natural alternatives for staying awake, compensating for some of the negative side-effects of dehydration and drug use.[8]

Motivations for taking drugs: transformation as an intended outcome

An individual's motive and subsequent synthesis of the drug experience into his or her life were additional themes of concern voiced by subjects. It was suggested that adolescents will often lack the maturity to integrate their drug encounters for spiritual and psychological growth and in this way fail to respect, emulate and contribute to the PLUR edict. Underlying these sentiments is the suggestion of a code of acceptable conduct; there is a difference between individuals who attend raves to 'get high' and those who choose to integrate a psychoactive experience with personal development and transformation, the latter being consistent with the

philosophy of raving. Many emphasized that obtaining a level of maturity and self-awareness is key before entering the rave environment, particularly when ingesting a psychoactive:

> Well you have to know yourself. You have to know exactly who you are when you go into a rave. The drugs, they can open up like ideas and possibilities in your head that you never knew you could possibly have. And for some people who have a hidden dark side like everybody does, it can be very traumatic if you're not ready for it. If you have some mental instability, weaknesses, it's not the right time.
>
> (24-year-old male)

> Not everybody can be a raver. Ecstasy will heighten who you are and that's probably why some people snap, 'cause there are things that they try to hide or are not aware of themselves, and they'll be shown. There's going to be a big light projected on it so that's why it's not for everybody. You have to have a certain maturity.
>
> (23-year-old male)

It was also noted that this kind of maturity is lacking among adolescents, and for this reason young ravers should refrain from drug use:

> I don't like seeing 15-year-old kids at raves, I just don't. You have to have a reality base before you escape it. I believe that you need to know who you are, you need to have ground rules in your head before you take any drug. You need to have a footing of knowledge and I had no clue what the hell I was when I was 15…I don't think you should be taking ecstasy when you're 15.
>
> (23-year-old male)

The following individual attributes his transition from taking drugs to 'get high' to taking drugs for personal growth as a combination of maturation and involvement in the rave scene:

> When we were young, we got high much less productively. I didn't grow really out of it. I had wonderful stories to talk about, weird stuff I saw in the sky, but I never really grew from my experiences with drugs. You learn something but you don't necessarily grow, and now I realize you do always like to keep something after a rave if you did it properly…. When you leave a rave you have to be more than you were when you came in.
>
> (22-year-old male)

This kind of division in terms of intended outcome of a drug experience was noted by Beck and Rosenbaum (1994), who discovered that MDMA users tend to be either spiritually/therapeutically focused in their pursuits or recreationally oriented.

Among the recreational users, the benefits of MDMA rest solely within the experience itself, whereas the therapeutically oriented individual feels that positive experiences and insights gained from MDMA could and should be incorporated into everyday life (*ibid.*:83). Ecstasy's ability to foster spirituality, personal development and life change has been documented at length (Cohen 1998; Eisner 1994; Metzner and Adamson 2001; Saunders 1996a, 1996b; Watson and Beck 1991) and has been reported by ravers:

> Thanks, I think, to ecstasy, I was able to *feel* each person's situation, in all of its pain and implications…. I have a new, real awareness of the global situation. I am graduating this semester and am now considering doing aid work in a Third World country for a while.[9]
>
> Still I've grown a lot from E….The emotional vision, becoming wiser, becoming more aware of yourself is far more important than what E takes from you. You take from drugs and they take from you too. I always say that I took more out of drugs than drugs took out of me.
>
> (24-year-old male)

Ecstasy is significantly the most widely used drug at raves and the ingestion of MDMA for its characteristic transformational and empathogenic properties is consistent with the finding that spirituality and personal transformation are central themes associated with the rave experience (Takahashi and Olaveson 2003). A content analysis on 84 personal rave accounts revealed that 42 per cent of accounts characterized the rave experience as religious or spiritual, and well over one-third of the accounts sampled made reference to a life change or personal growth as a direct result of rave attendance *(ibid.)*. Another theme revealed by these accounts was the desire to create a better world through the application of PLUR *(ibid.)*. Correspondingly, there is an expectation placed upon ravers to apply the knowledge gained from the rave experience outside the rave context to make a difference in the lives of others. This theme is evident in the following statement made by an anonymous raver who implores others to think about their motives for taking MDMA, encouraging users to promote the insights gained from ecstasy outside the rave environment:

> To all you E-heads out there, please, please, take the time to consider what you are doing to yourself, how it affects you and why you do it. E should be held as a sacred thing, not just something to do when you're bored. Get into the music, or something else, invite your passions to entrance you. Express what you've felt on E in the 'real world'. Make a difference in people's lives.[10]

Similarly:

> Raves have indeed changed my life, and lucky as I am I have many wonderful friends with whom to share those changes! As I see it there wouldn't be any

> point to have been raving and living the whole rave experience without being able to extend those feelings and changes with my friends outside of raves.
>
> (22-year-old male)

A hierarchy of drugs: 'good' versus 'bad' drugs

A hierarchy of drugs and substance users is a further indication of an underlying standard of conduct in operation. Many ravers emphasized the point that the ingestion of MDMA and other related substances is reserved for the rave environment, and it is this pattern of use which distinguishes ravers from drug addicts. The reference to ecstasy as a 'holy sacrament' reinforces the view that the rave experience is a ritual process wherein MDMA use is appropriate only in that ritual or sacred space (see Saunders 1996a:112; Malbon 1999:119–20). In reference to MDMA, one 21-year-old male informant stated: 'For me the experience is sacred and special, by not doing it all the time it stays that way' Many informants stressed that the rave experience is a process that includes more than the event alone; prescribed pre- and post-rave behaviours are well thought out and ritualized (see Saunders 1996a: 112–13; Malbon 1999:170–9).

Thus, ecstasy cannabis and LSD, substances known to elicit a change in perspective, are deemed by some ravers to be more 'acceptable' than the 'feel-good' drugs such as heroin and cocaine.[11] Heroin and intravenous drug use is often considered socially unacceptable and taboo in the rave community (Power *et al.* 1996; Topp *et al.* 1999). According to one 21-year-old male, 'heroine and cocaine are for stupid people with too much money'. Nitrous oxide was also viewed negatively by some subjects: 'Some people will inhale nitrous oxide but that's just pure stupidity' (20-year-old female). The ability to transform is a key component of the rave scene's most popular rave drug, ecstasy. It is this unique property of the drug which may provide insight into the discontinued and infrequent drug user. The observation that the extraordinary nature of one's first experience on MDMA can never be recaptured, making subsequent encounters less satisfying, was a consistently reported theme among subjects. The opinion that 'ecstasy can teach you things, force you to see things differently, but there's a limit and once you've reached it, you're better off letting it go and preserve your neurons' (20-year-old female) was a common sentiment. The decision to limit or discontinue ecstasy use also has a physiological basis; frequent and excessive use of the drug will gradually deplete serotonin levels in the brain, meaning that the empathogenic and 'ecstatic' qualities of the drug will eventually cease, leaving only the amphetamine-like properties (Reynolds 1999:86). While some ravers attempt to preserve MDMA's core properties by resorting to polydrug use, many others opt to limit MDMA consumption, and some elect to discontinue drug use altogether. I encountered a number of individuals in the latter two groups throughout the course of my research —individuals who were specific in pointing out that the transformations resulting from past psychoactive substance encounters provided them with the ability to

attend raves and attain similar experiences naturally. As I will now discuss, there are biological and psychological explanations for this commonly reported phenomenon.

Ritual, flashbacks and neural tuning

Neural tuning refers to a 'permanent change in the central nervous system (CNS), resulting from repeated experience of a particular condition of the nervous system which makes the individual more susceptible to re-establishment of that same condition' (Castillo 1995:25). Neural tuning occurs when the balance of the sympathetic (ergotropic) and parasympathetic (trophotropic) activity of the autonomic nervous system (ANS) shifts as a result of continued stimulation of one system resulting in an activation response in the other (see Gellhorn 1969; Gellhorn and Kiely 1972). Under normal conditions these systems are antagonistic to each other, meaning that stimulation of the one will inhibit activation of the other. However, maximal stimulation of either system can produce a kind of spillover effect, resulting in the simultaneous discharge of both systems. Maximal stimulation of the ergotropic and trophotropic systems is associated with 'the most intense forms of mystical experience and may lie at the heart of compelling spiritual experiences, meditative states, near death experiences and other types of human experiential phenomena' (Newberg and d'Aquili 2000:256). Many of the elements present in ritual (i.e. repetitive auditory and visual stimuli, dancing and the ingestion of psychoactives) lead to the simultaneous discharge of the ANS subsystem, which can be expressed as profound alterations in consciousness and even a reorganization of personality (Laughlin *et al.* 1992:146). Mechanisms such as these are commonly referred to as drivers (*ibid.*:146), and there now exists extensive literature on the psychobiological effects of driving mechanisms, drawn from cross-cultural research (see d'Aquili and Laughlin 1975; 1996; Gellhorn and Kiely 1972; Lex 1975; Mandell 1980; Neher 1961, 1962; Turner 1983; Winkelman 1986, 1997, 2000). Although neural tuning can occur after initial exposure to one or more of these driving mechanisms, learning plays an essential role as rituals are usually repeated throughout the life-cycle, fostering the development of new neural network patterns and the reinforcement of existing structures (re-tuning). Research on the mind states referred to as *trance* and *ceremonial possession* indicates that personal beliefs and expectations, setting and, most importantly, past experience are essential to trance induction (see Ervin *et al.* 1988; Rouget 1985; Ward 1984).

I argue that what has been commonly referred to as the *flashback phenomenon* can be grounded within the framework of neural tuning. Recent publications on psychedelic drug flashbacks have departed from the classical biochemical and pathological explanation to suggest that the spontaneous re-experience of sensations originally associated with a previous drug encounter are the product of learning, environmental context and personal expectation. Ecstasy, in addition to other synthetic drugs associated with the rave scene, has been reported to induce flashbacks among its users (see Batzer *et al.* 1999; Leikin *et al.* 1989; Lerner *et al.* 2000; Matefy *et al.* 1978; Metzner and Adamson 2001; Seymour and Smith 1998).

I contend that psychoactive ingestion (specifically MDMA), in tandem with additional driving mechanisms present in the rave context, may produce simultaneous discharge of the sympathetic and parasympathetic nervous system and subsequent neural tuning. Continued participation in the rave environment and repeated exposure to the rave event's driving mechanisms, such as dancing and repetitive auditory and visual stimuli, strengthen and develop previously tuned structures such that participants through time become adept at re-attaining these states naturally. Previous experiences can therefore be elicited with the presence of a limited subset of the original driving mechanisms, including, in some cases, only one. The reported change in perspective and the indication that after a period of raving one can eventually attend events and 'tap into' a previously drug-induced state naturally are consistent with what has been reported cross-culturally among societies where ritual and the experience of multiple realities are integrated in the culture's cosmology

MDMA and neural tuning at raves

The altered states of consciousness fundamental to raving are not only regularly sought out by participants, but DJs are quite proficient at actively stimulating these experiences among the dancers. The ability to drive participants to the state of 'ecstasy' is part of the DJ's craft. It is inscribed in their technique and is a measurement of their skill. DJs are ultimately responsible for the group's consciousness and experience at a rave as 'they create the state of mind and the buzz for everybody in the room…they can crash it or they can take it up as they choose' (25-year-old male). It is for this reason that some have referred to the DJ as a 'techno-shaman' (see Hutson 1999; ENRG 2001). Techno music has been correlated with an increase in heart rate and systolic blood pressure, alterations in levels of neurotransmitters, peptides and hormonal reactions, in addition to changes in emotional state (Gerra *et al.* 1998). As well as the auditory constant of techno music, participant use of drums and whistles and the photic stimulation of lasers and strobe lights have the potential to activate alpha and theta brain waves characteristic of trance and visionary states (Neher 1961). Conditions of extreme physical exertion such as prolonged dancing activate the body's endogenous opiate system, wherein endorphins are secreted from the pituitary gland, resulting in an increase in delta and theta waves (Winkelman 1997:400) and the symptom of euphoria and analgesia. Prolonged dancing leading to fatigue, hyperventilation and oxygen and blood sugar depletion may synergistically produce hypoglycaemia and a hallucinatory experience (Winkelman 2000:148). Overheating from such extensive motor activity, in addition to exposure to the high temperatures generally present at raves, are further triggers which activate the release of endogenous opiates (*ibid.:* 151). The tendency for ravers to fast or limit food intake before, during and after an event, as was observed during fieldwork, is yet another trigger of alteration in consciousness.[12] Winkelman notes that fasting not only makes individuals more susceptible to trance states (1986: 179), but hypoglycaemia, a consequence of

fasting, can intensify auditory driving produced from repetitive rhythmic stimuli (*ibid.*:178). Further, sleep deprivation has been noted to invoke brain activity typical of trance states (*ibid.*:176).[13]

Despite the presence of these natural driving mechanisms at raves, MDMA continues to have a dominant role in the subculture, and this may be due to the fact that the altered experience being sought out can be achieved with little effort. While over 90 per cent of the world's cultures recognize and seek out altered states of consciousness (ASCs) (Bourguignon 1973), Euro-American society has tended to discount ASCs in favour of 'rational' thought as represented by the waking phase of consciousness. The failure to explore these states of consciousness in our culture has led to what Laughlin *et al.* (1992) label *monophasic* consciousness. Individuals socialized in a monophasic culture are not trained to attend to or develop their own personal phenomenology. For the monophasic individual, psychoactive experimentation provides an easy and immediate access to an ASG, and these substances have the ability to tune and retune the autonomic nervous system with little effort (Laughlin *et al.* 1992). According to Seymour and Smith, 'when one takes a psychedelic drug, that conditioning breaks down and one is aware of a whole new range of sensory material' (1998:241). This kind of new awareness was described by one informant as 'a key that opens you up to new ways of seeing things; it doesn't expand your mind but rather places you in a higher position from which you can see the world' (23-year-old male). Some ravers who have taken psychoactives describe being 'on the same wavelength' with other psychoactive users (see also Malbon 1999:132), and this kind of mutual understanding implies a level of shared neural tuning among users. Statements such as 'when I meet someone who has raved, we don't even need to say a word to each other, we just know how the other feels' (22-year-old male), in addition to the frequently reported feeling of 'connectedness' at rave events, are indicative of the shared experience of neural tuning. Not only did ravers refer to other members of the subculture as 'family,' but the opinion that one is better understood by another raver as opposed to a family member or friend who doesn't rave was frequently expressed:

> I have a childhood friend who doesn't take drugs, doesn't drink alcohol, doesn't rave. I know him very well but he doesn't know me very well. He knows me in a way but there's a whole aspect of emotions and experience that he has no idea I have.
>
> (24-year-old male)

Consistent with the aforementioned code of conduct, personal growth and transformation are expected outcomes of the drug experience among ravers. This expectation not only prescribes the context of drug ingestion for the rave setting, but also favours the selection of substances which enable the individual to obtain new knowledge or awareness from the experience. Research on trance states suggests that learning and past experience are fundamental to ASC induction, and this process is also alluded to by rave participants. Many informants were aware of the

fact that the music and dancing alone are enough to produce an ASG; however, they also emphasized that one must learn to attend to these natural driving mechanisms and MDMA can accelerate and facilitate this process. As I mentioned earlier, a number of informants pointed out that after a period of taking psychoactives, drugs were no longer required to achieve an altered state. This sentiment is expressed in the following 25-year-old male's statement:

> Once you're done experimenting, you've done this for two years of your life, once you've done that, you don't have to search for that, you can go to events sober and still have just as much fun as you did when you were messed up five years ago, it's not necessary to find that state of consciousness through drugs.
>
> (25-year-old male)

Neural tuning is not only implied in these statements; some participants are very precise about how MDMA and other psychoactive substances operate in their systems. In referring to his own personal experience with ecstasy, Simon Reynolds suggests that an appreciation for and bodily reaction to the music can only be attained through an initial encounter with MDMA:

> Could you even listen to this music 'on the natural', enjoy it in an unaltered state? Well, I did and do, all the time. But whether I'd *feel it* if my nervous system hadn't been reprogrammed by MDMA is another matter. Perhaps you just need to do it once, to become sens-E-tized, and the music will induce memory rushes and body flashbacks.
>
> (Reynolds 1999:139)

To an outsider, techno music can sound repetitive, monotonous and incomprehensible as it defies the characteristics of conventional music. Rave music is comprised of rhythm and sound; it is anonymous, continuous, cyclical, and in this way it challenges the listener to develop new listening skills (Fritz 1999:76). According to Fritz, rave music demands a certain concentration and focus so the 'listener becomes closer to being a part of the musical process rather than a passive audience' (*ibid.*:6). Characterized as a three-dimensional sound specifically designed to penetrate the body (*ibid.*:76), according to many participants MDMA facilitates the ability to grasp the music such that musical receptivity transcends the auditory to include all the senses. The natural outcome of this embodied musical awareness is expressed through dancing, and MDMA's role in this kind of learning sheds light on the consistent finding that music and dancing outweigh drugs as the dominant appeal of raves. Although the relationship between techno music and ecstasy is noted by Reynolds to be one that has evolved into a 'self-conscious science of intensifying MDMA's sensations' (1999: 85), it would seem that the reverse is also true: MDMA functions to intensify sensations already evoked by the music. The embodied experience of musical perception, and MDMA's facilitation in acquiring this knowledge, is evident in the following respondents' statements:

> Like you can listen to a techno song and get shivers down your spine, but if you've never taken ecstasy, you'll never get those shivers. You don't know that it's possible, it opens like a certain kind of love that you won't have before.
>
> (22-year-old male)

> My first indication that I was rushing was the beat of the bass from the techno began to fill my brain and I was unable to sit still any longer on the couch. I reached the middle of the dance floor and let the music take me to heights I never dreamed imaginable. I lost all self consciousness, and felt in tune with the music, as though the bass was a life force and I was connected to it. My movements became fluid and I was able to dance along with it in utter freedom and abandon.[14]

Flashbacks at raves: neural tuning

The term 'flashback' most often refers to a spontaneous re-experience of images, physical sensations or emotional states associated with a previous drug encounter (McGee 1984:273). Although the etiology of flashbacks has long been a focus of debate, I argue that the association between the flashback phenomenon and a psychoactive substance is our culture's way of explaining and categorizing the process of driving mechanisms and neural tuning. Generally it is the individual who experiences psychological disturbances with flashbacks who seeks out medical attention (Seymour and Smith 1998:247), and this has introduced a sampling bias which has supported the tendency to regard flashbacks as pathological. Analysis of flashback occurrences among a random sample of psychedelic users, however, suggests that most individuals characterize flashbacks as positive and non-threatening in nature (see Batzer *et al.* 1999; McGee 1984; Matefy 1980; Matefy *et al.* 1978; Schick and Smith 1970; Wesson 1976).

Examination of the triggers known to elicit flashbacks shows them to parallel a number of agents present at raves. Environmental stimuli which resemble the context in which the original experience occurred may trigger a flashback (see Matefy 1980; McGee 1984; Heaton 1975), and this has led some to view flashbacks as learned phenomena. Stimuli associated with specific experiences operate as memory cues which can trigger the re-experience of emotionally salient encounters that may or may not be associated with a particular drug. According to McGee, 'the more similar the contextual stimuli are to those conditions prevailing at the time of the original storage of memories, the more likely the probability of their retrieval' (1984: 277).

While the location of rave events varies, there are a number of 'contextual stimuli' that are consistently present at raves. The techno music, crowds of dancers, glow-sticks, projections of psychedelic imagery and elaborate lighting systems can be expected at every event. These environmental factors are also conducive to this phenomenon since flashbacks are more likely to occur in conditions known to induce ASCs, such as stress, fatigue or reduced sensory input (Heaton 1975:157).

Whether the association is connected to a past drug encounter or previous exposure to a natural occurring ASC, the sensorial components of raves seem to trigger memory recall. Many informants noted immediate shifts in physical sensations and/or mind state upon entering the rave environment:

> Fourteen thousand people jumping up and down and all you could hear was the banging of the floor, it was absolutely incredible. You walk in and all you see was this sea of people and all they had was two glow-sticks each, so 28,000 glowing objects jumping up and down, and just bang, that's all you could hear. You couldn't even hear the music 'cause the banging on the floor was so loud. Absolutely incredible, I'm shivering just talking to you about it, but yeah it was phenomenal, it was an incredible feeling to walk in and just see this mass of people going nuts. I literally have goose bumps just talking about it.
>
> (24-year-old male)

> Sometimes when I walk into a rave and smell the familiar scent of incense, the sight of the glow-sticks, and feel the overpowering beat of trance, I get this light-headed sensation and sense of weightlessness in my body that reminds me of the first experience I had on E. It's awesome.
>
> (21-year-old female)

Similar sensations have also been reported by ravers when exposed to only one of the variables present at raves, such as listening to techno music at home:

> It was 3.00 in the morning and this DJ played this song called 'Air Tight' and it's an incredible track, unbelievable song and the mode of response just listening to it at home, it still elicits the same response that it did that night when I was listening to it, and I have that experience every single time.
>
> (24-year-old male)

Personal expectation is also correlated with flashback experiences (see Matefy *et al.* 1978; Heaton 1975), suggesting that flashbacks are often sought out by drug users. According to one DJ, people attend raves with the expectation of reaching a transcendent experience. It is this anticipated physical and emotional ordeal that distinguishes a rave from a nightclub:

> When you're going to a rave, you're going there particularly to experience a certain type of event. That's what you're going there for. You're going there to get this particular emotion, this particular sensation in this particular environment that you're looking for. You're going there to get it.
>
> (25-year-old male)

Heaton (1975) found that by attending to relevant stimuli and blocking out external inputs subjects were more likely to become aware of a broad range of psychedelic

sensations. Some informants attributed their ability to recreate MDMA-like experiences by focusing on the music and bodily sensations while dancing:

> I believe that there's a very strong conditioned response when you take music and the pleasure that Ecstasy gives you, so I think that the mind can very easily extend that feeling of pleasure if you just focus on the music. I think lots of people don't take advantage of this, 'cause there is a way to extend the experience without drugs.
>
> (32-year-old male)

Ravers also talked about the ability to completely 'let go' while dancing and refer to this process as 'trance-dancing'. Although participants dance in groups, socialization on the dance floor is rare, as ravers will often refer to 'being alone among a crowd'. Some ravers described experiences involving the dissolution or disappearance of the ego through the process of dance. As one 32-year-old male recounts, 'like I'm dancing, feeling empty, I cut all input from my senses and not physically but I'll close my eyes sometimes and once all the perceptions are gone, it's like being dead, like I don't exist anymore'. This also supports the notion that ravers are likely more proficient in inducing flashbacks, since flashbackers have illustrated greater adeptness than non-flashbackers at being able to lose themselves or 'relinquish personal control for the sake of a peak experience, and altering of consciousness' (Matefy 1980:552).

Finally, there is an association between flashbacks triggered by marijuana, particularly in conjunction with LSD (see McGee 1984; Wesson 1976). This may shed some light on its widespread use in the Canadian rave scene; the underlying effects of state-dependent learning[15] may encourage users to quit the class of synthetic drugs, favouring marijuana for its potential to induce MDMA flashbacks.

Conclusion

The majority of individuals who attend raves use psychoactive substances, and clearly the range and availability of synthetic drugs is on the rise in Canada. However, in the process of ascertaining the range and quantification of illicit substance use at events a growing category of rave participants has been ignored by academics. Examination of ravers' attitudes toward drugs has suggested that most ravers use these substances as tools to enhance the extraordinary bodily and emotional aspects of raving, which they believe to be primarily a product of the music, the dancing and the crowd rather than the drug itself. Underlying these attitudes is the existence of a code of acceptable behaviour wherein psychoactive ingestion is associated with an intended outcome of learning, personal growth and transformation. This expectation not only dictates that the context for ingestion should be limited to the rave locale, but has also influenced the drug of choice to be MDMA, a substance noted for its therapeutic and spiritual potential In many cases this kind of learning, which I have argued is 'neural tuning', has imparted to

individuals the ability to reach a 'natural high' while in the rave environment. Although neural tuning can occur through repeated exposure to the natural driving mechanisms present at raves, psychoactive experimentation among individuals from a monophasic culture enables neural tuning that is immediate, and relatively effortless, among those who would otherwise be unacquainted with the potentials of natural ASC induction.

The flashback phenomenon is evidence of this process of immediate tuning. Examination of the triggers known to elicit flashbacks has illustrated that these triggers are all present at raves and many participants have learned to manipulate these mechanisms to re-create natural highs that mirror past drug experiences. As this learning takes place, a growing number of participants have argued that the same sense of community, abandonment and transcendence can be attained from the music and dancing alone, and that these are the primary reasons for attending events.

Although many ravers long for the 'good old days' when raves were not contaminated by novel street drugs and blatant drug abuse, this research suggests that the original philosophy and perhaps vision of the rave movement are being kept alive by a small but potentially growing number of individuals who are clearly committed to the music, the dancing and the vibe.

Notes

1 I would like to thank Charles Laughlin, Gwyneth Parry, George Takahashi and Tim Olaveson for helpful feedback on earlier drafts of this chapter. I also acknowledge Ian Prattis and Marie-Françoise Guédon for their continued support in this research. Finally, I am grateful to those members of the rave community who were kind enough to share their time and experiences with me.

2 The death of a 21-year-old male at a Toronto rave prompted Ontario's Chief Coroner to order an inquest into the MDMA-related death. Pressure from the media and politicians motivated city councillors to consider having raves banned. Protest from the rave community halted prohibition, and instead 19 recommendations were made to increase participant safety at rave events. These recommendations formed the basis of a city bylaw requiring promoters to obtain permits and follow specified guidelines to hold legal raves. Other cities in Canada, such as Ottawa, Vancouver and Calgary, have created similar bylaws in an effort to regulate rave events.

3 Originally the term 'designer drug' referred to legal substances that were designed to mirror the effects of illicit substances (Saunders 1996a: 10). Today, however, the terms 'synthetic' and 'designer drugs' are used synonymously to refer to illicit drugs that are created to evoke a specific effect. MDMA, MDA and LSD are examples of designer drugs. This term is also used for drugs that are considered 'new', or old drugs such as LSD which have acquired a renewed popularity (Saunders 1996a:10). Designer drugs are also referred to as club or dance drugs, reflecting the popularity of designer drugs in the club and rave scenes.

4 The term 'empathogenic' refers to the unique qualities of MDMA and its related class of drugs. Such characteristics include a heightened sense of interpersonal

communication, emotionality and sensory perception (see Tramacchi 2000:211; Metzner and Adamson 2001:182).

5 My examination of neural tuning in the rave context is informed by a collaborative anthropological study of rave culture conducted over an eight-month period (Takahashi and Olaveson 2003), in addition to ongoing fieldwork. In the collaborative project, a total of 121 surveys were distributed to ravers through the target and snowball sampling method. In this chapter the terms 'we' and 'our' in relation to survey results refer to both authors. Material was also obtained from personal accounts of ravers posted on Internet list-servs and rave websites. Semi-structured interviews of rave participants were the primary source of data for this study. Finally, participant observation was conducted at 21 events in the metropolitan centres of southern and eastern Ontario and Quebec. Recognizing the blurring of boundaries between clubs and raves, I attended both types of venues as both are identified with rave culture, although ravers themselves still feel that there remains a distinction. Observations at raves and after-hours clubs generally took place during the peak hours of these events (12.00–5.00a.m.), although I did remain to the end at eight events and this resulted in up to 12 hours of observation per event.

6 Some informants indicated that 'peach' is a mixture of MDMA and various other drugs, such as LSD or heroine.

7 Ravers recognize the vibe as a kind of energy, pulse or feeling that can only be experienced physically Reynolds describes the vibe as 'a meaningful and *feeling*-full mood that materially embodies a certain kind of worldview and life stance' (1999: 372). The DJ, the music and the people attending the event are identified by ravers as factors which contribute to the quality of the vibe.

8 In addition to preventing dehydration, these energy drinks contain the amino acids that are believed to be the key products used by the body to produce neurotransmitters such as serotonin (Seymour and Smith 1998:241). It should also be noted that many of these 'smart' drinks are associated with enhancing a drug's effect.

9 http://www.hypereal.org/raves/spirit/testimonials/Harmony-SanFrancisco.html (accessed 8 August 2001).

10 http://www.ecstasy.org/experiences/trip82.html (accessed 8 August 2001).

11 It should be noted that, although common themes and features of the rave scene are visible, it is not a homogenous subculture. The fragmentation of a unified genre of rave music and an accompanied style of raving to multiple genres—i.e. jungle, gabba, trance, Goa, hardcore and breakbeat, to name a few—has been witnessed worldwide. Thus not all ravers prescribe to PLUR and not all ravers are interested in personal growth and transformation. Individuals who are interested in the spiritual aspects of raving are more likely to listen to trance music and attend Goa trance events (Fritz 1999:190). Our survey research indicated that individuals who have had religious experiences at raves are much more likely to listen to trance music. The association between music preference and drug choice has also been noted by Weber (1999) and Reynolds (1999). Weber observed that in the greater Toronto area crystal methamphetamine is associated with jungle and techno and cannabis with hip-hop (1999: 327). Similarly, Pedersen and Skrondal (1999) found ecstasy use to be highest among house/techno rave-goers.

12 Most informants felt that the full effects of a psychoactive are more likely to be experienced on an empty stomach. The vomiting that can accompany the initial onset of MDMA was another reason for limiting food intake. Aside from beverages to prevent

dehydration, food is generally avoided both during and after rave events since substances such as ecstasy and methamphetamine act as appetite suppressants.

13 That is, high-voltage slow-wave EEG, synchronous activity and parasympathetic dominance (see Winkelman 1986, 1997, 2000).

14 http://www.ecstasy.org/experiences/trip58.html (accessed 8 August 2001).

15 This term refers to the effect that what is learned under the influence of a drug-induced state is best recalled in that state.

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