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**Karl Jansen M.D., Ph.D.**

LONDON researcher Karl Jansen, M.D., Ph.D., and Member of the Royal College of Psychiatrists, is the world's leading expert on ketamine. He has studied ketamine at every level: from photographing the receptors to which ketamine binds in the human brain, while earning his doctorate in clinical pharmacology at the University of Oxford, to publishing papers on his discovery of the similarities between ketamine's psychoactive effects and the near-death experience during his study of medicine in New Zealand. Dr. Jansen believes that ketamine can have potent healing powers when used as an adjunct to psychotherapy but warns of the addictive nature of ketamine. Because of this risk, he has developed new methods for the treatment of ketamine addiction. Dr. Jansen left Oxford in 1993 to train in psychiatry at the Maudsley and Bethlem Royal Hospitals. He is now a psychiatrist in London.

**Ketamine: Dreams and Realities**

Karl Jansen M.D., Ph.D.

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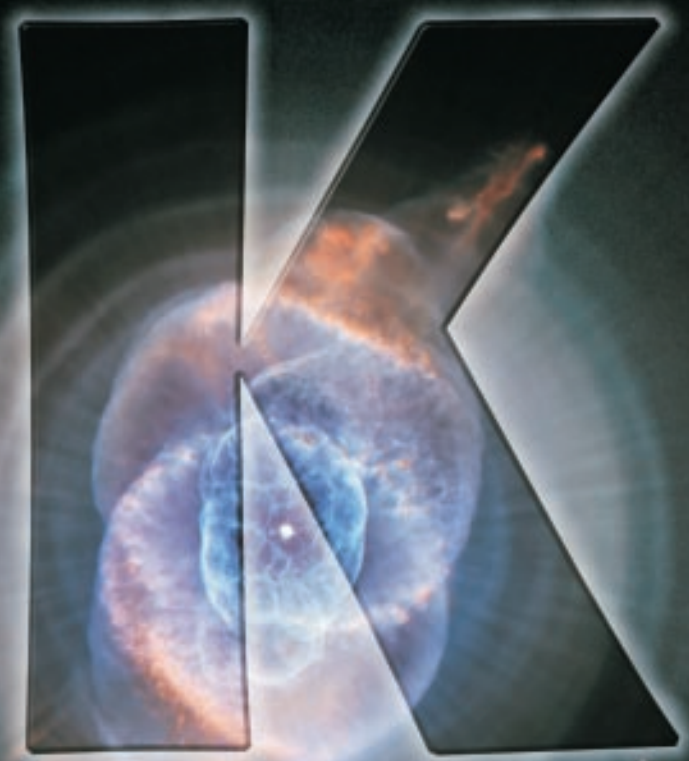

# Ketamine: Dreams and Realities

**With a new preface by the author.**

**Introduction by**
**Emanuel Sferios, Founder of *DanceSafe***

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"***Ketamine: Dreams and Realities*** is by far the most authoritative and comprehensive book on the subject of ketamine ever scribed. While the ketamine experience can be vast beyond imagination, Dr. Karl Jansen has managed to capture nearly every facet of this slippery beast in fine detail. Going well beyond an introductory text for the ketamine novice, ***Dreams and Realities*** explores in depth both the shimmering insights and existential horrors wrapped up in this elusive molecule. A must read for anyone serious about unraveling ketamine's many mysteries."
— James Kent, *TRP Magazine*

Indispensable reading for those with any interest in ketamine. Entertaining, thought-provoking, and thorough.
— Rick Strassman, M.D.

Ketamine: Dreams and Realities

# Ketamine:

## *Dreams and Realities*

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# Ketamine:

## Dreams and Realities

Karl L.R. Jansen, M.D., Ph.D.

## Table of Contents

## Preface to the Second Edition

SINCE THIS BOOK first went to press at the end of the year 2000, the realization that ketamine is a fascinating substance has spread rapidly through several spheres. These include academic research, the dance culture, anesthesia and emergency medicine, psychonaut pioneers, and many others. This generated an unexpected demand for the book, and supplies were soon exhausted. We now find ourselves heading toward the second printing to meet the demand for *Ketamine: Dreams and Realities*, even though the book was rarely for sale in bookstores and never had a distributor.

An important reason for the wider interest in this book may have been that it addresses considerably more than just ketamine: its scope includes fundamental questions about the nature of the psychedelic experience, drug-induced spirituality, and the near-death experience, while also addressing more practical issues, such as the true nature of 'drug-induced psychosis,' and the forces which drive drug dependence (and how to defeat them).

Ketamine was invented in 1962. By late 2000, there were about 6,500 papers in the Medline/PubMed database about ketamine. Just three years later, there are 8,400 papers – an increase of almost 30%. This is mostly the result of a massive revival of interest in ketamine by anaesthetists, emergency doctors, and pain specialists, due to the excellent safety profile of the drug. Relatively few countries have chosen to follow the USA and Australia into making ketamine a controlled drug, although the World Health Organization/United Nations is continuing to mull the question.

However, despite this avalanche of papers appearing since 2000, there are few truly new findings that require a mention. Many of the 'new' publications are covering old ground. So while I was originally planning an entirely new book called *Ketamine Reconsidered*, I have decided to wait until there have been more important advances and changes. I have included a list of some interesting new references be-

low, which should be added to the 600 on which this book is based.

Most of the research since 2000 has continued to emphasise the safety of ketamine, especially in children and in emergency settings. The key development in the dance culture has been a move internationally toward sourcing cheap ketamine from factories in China, and the rapid growth of ketamine as a recreational drug throughout Asia. A test of urine samples from a rave party in Taiwan found that nearly half were positive for ketamine (Lua et al. 2003).

There is still no evidence that ketamine can cause 'Olney's lesions' in primates. These experimentally-induced brain cell changes appear to be confined to small brains, such as those of rats, which have a high metabolic rate. Studies of memory and other cognitive functions in ketamine users still suffer from many methodological flaws, for instance failing to provide urine test results to prove that subjects were not affected by drugs at the time of the testing.

However, the period since this book was first published has seen one landmark event in the history of ketamine: the passing of pioneer psychonaut and neuroscientist Dr. John Lilly in September 2001, aged 86. Dr. Lilly was the world's most famous self-experimenter with ketamine and flotation tanks, and a saver of dolphins. He was the model for films such as *Altered States* and *The Day of The Dolphin*. Curiously, the 'official' obituaries in many newspapers entirely failed to mention the central role that self-experimentation with ketamine played in John's life for thirty years.

It is not clear what the future holds for ketamine research, but it is likely to be an exciting adventure.

Once again, I would like to thank all of those who helped to make this book possible, particularly Bob Wallace of Promind Books, who sadly passed away recently, Rick Doblin and the staff at MAPS, and Jon Hanna.

Karl Jansen,
August 2004
12 Harley Street, London W1G 9PG
K@BTInternet.com





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## Introduction

The human desire to alter consciousness through the use of psychoactive drugs is as old as recorded history. Like music and dance, the ingestion of mind altering substances is a universal and cross-cultural human behavior.

The potential benefits of psychoactive compounds to the individual and society are recognized by many. Indigenous cultures integrated the use of psychoactive plants within their spiritual or religious institutions, and modern users of psychedelic or entheogenic compounds often report spiritual, therapeutic, and recreational benefits from their use. The interdisciplinary field of "consciousness studies" also recognizes that the investigation of drug-induced altered states allows for a better understanding of human consciousness.

At the same time, there is no doubt that psychoactive drugs can be harmful. The wide availability and illicit marketing of drugs like LSD, MDMA, and ketamine as "party drugs" to mostly young people presents significant public health and drug policy challenges. Tragically, many young people are poorly informed about the real risks of using these drugs, and of ways to minimize those risks. This is largely the result of alarmist and one-sided "anti-drug" programs, which pass for "drug education" in many schools across the United States.

Despite extraordinarily expensive and repressive efforts over the last several decades to prohibit illicit drug use, the number of addicts and serious abusers has not significantly declined. The increasingly militaristic and punitive nature of the "War on Drugs" policy has swelled the prison population in the United States to an unprecedented two million incarcerated. About four hundred thousand of these prisoners have been convicted of non-violent drug offenses.

Most current drug abuse prevention and education efforts rely on overly simplistic abstinence-only messages like "just say no" and "winners don't use drugs," which have been shown to be unsuccessful at preventing drug use among youth who are the primary target audience.

The Internet, as well, has increased popular awareness of many lesser-known psychoactive compounds, increasing demand for these substances and generating a "lay" market that was virtually non-existent a decade ago. At the same time, access to Internet web sites that provide accurate, truthful information on drugs is blocked in most high schools by software that scans for drug-related keywords. As a result of these and other "anti-drug" policies, young people who are exposed to a greater variety of psychoactive drugs than ever before have few opportunities to obtain information that they can trust is fair and accurate.

As the director of a harm reduction organization working with youth, this reminds me of an incident I witnessed at a dance party in Oakland, California. A young woman was walking around with a snorting spoon, offering "bumps of K" to anyone who wanted one. A young man, already feeling the effects of the MDMA he had taken earlier, asked, "What's K?"

Her response was simply, "It's called Special K. It's really fun. It makes you feel all dreamy and floaty." She held up the spoon.

"Cool," he said, and snorted the white powder.

Incidents like this take place every weekend in bars, nightclubs, and house parties around the world. Whether we condemn as irresponsible those who haphazardly ingest drugs they know nothing about, or see this as natural behavior among novelty-seeking youth in a consumer culture that promotes instant gratification, one thing is certain: psychoactive drugs are not going away. The availability and popular use of drugs like ketamine will in all likelihood continue to increase during the coming decades.

This is why the book you are now holding is so important. With the publication of *Ketamine: Dreams and Realities*, Dr. Karl Jansen has provided the first authoritative and comprehensive analysis of ketamine written in layperson's terms. As I have witnessed personally again and again, the people most likely to be harmed by the use of psychoactive drugs are those who know the least about them. In explaining both





the potential benefits as well as the risks of using this drug, Dr. Jansen has made an important and timely contribution to the nascent but urgent effort to understand and develop a pragmatic public health approach to the ever-expanding social phenomenon of psychoactive drug use. Not only does this book contain a wealth of practical harm reduction information for the ketamine user, it also elucidates for doctors, therapists, treatment providers, and policy makers the mysterious yet compelling reasons why many people (unlike the young man in my story above) do make a fully-informed choice to use this drug. Dr. Jansen also discusses in depth a treatment program for people whose initial choice to use the drug developed into the dead-end of ketamine abuse and addiction.

Dr. Jansen's book is full of remarkable philosophical insights into the relationship between mind (inward subjective experience) and brain (neuroscience), making a valuable contribution to our understanding of human consciousness. Dr. Jansen is to be commended for this extensively researched and thorough exploration of ketamine. *Ketamine: Dreams and Realities* will undoubtedly remain the most relevant and influential book on ketamine for many years to come.

Emanuel Sferios
Executive Director, DanceSafe
www.dancesafe.org

## Prologue

*Recently, ketamine has been introduced as a general anesthetic agent… the drug produces 'dreams'… Appreciation of these characteristics has resulted in consumption of the drug for psychedelic effects…*[490]

**Charles Reier, M.D.**
*New England Journal of Medicine (1971)*

*If captains of industry, leaders of nations could partake of this love medicine the whole planet might be converted into the Garden of Eden… At no time did it seem possible that I or anyone else could become a 'ketamine junkie'…*[423]

**Marcia Moore**
*Journeys into the Bright World* (1978)

*Marcia became addicted to ketamine and committed suicide (January 14, 1979). Ketamine is dangerous. Its use should not be encouraged.*

**Howard Alltounian, M.D.**
Husband of Marcia Moore (1998)

*I can't understand why anybody would want to take the stuff. It gives you nightmares, doesn't it?*

**Consultant Psychiatrist in Addictions**
(1996)

*That 22-minute journey to becoming the intelligence at the heart of the universe remains the most powerful and cosmic experience of my life.*

**Ketamine User**
(1997)

*In nearly 25 years of clinical experience, the benefits and limitations of ketamine analgesia and anaesthesia have generally been well defined.*[489]

**David Reich, M.D.** & **George Silvay, M.D.**
*Canadian Journal of Anesthetics* (1989)

*The hazards and pitfalls of recreational use loom dramatically larger than with any other psychedelic...it seems unlikely that K's popularity will increase.*[563]

**Rameses Sputz**
*High Times* (1989)

*It's just another dodgy substance we don't know nearly enough about. The drug is likely to disappear as suddenly as it seems to have emerged.*[402]

**Peter McDermott**
*The Face* (1992)

*K has exploded in the past few months.*[72]

**John Cloud**
*TIME Magazine* (1997)

*The Best of '99: Pogo sticks, Southwark, Lisbon, Vasomax, Special K, alt.country…*[587]

*Time Out, London* (January 20–27, 1999)

This book brings together many different aspects of ketamine, also known as "K." It presents the often conflicting views that have emerged since this multi-faceted drug was invented in 1962, in the hope that a clearer picture may emerge from the dense mass of mythology, rumor, popular accounts, and over 7,000 scientific and medical reports that have appeared since then. *Ketamine: Dreams and Realities* was written for non-specialists. No scientific or medical knowledge is assumed,





and plain language is used as much as possible. However, there are over 600 references for those who would like to investigate more deeply.

A clearer picture *does* emerge from the myths and travelers' tales that hover in a confusing swarm around this mysterious drug. Many sources were consulted. The origins range from the latest reports in formal journals, the back pages of *High Times*, the front pages of *The Face*, *Muzik,* and pop culture, to conversations with a wide variety of people who've experienced the drug in different contexts: users, patients and their doctors, drug workers, victims, law enforcement officers, and an array of professionals and experts. Some of the users who were interviewed have been described as "psychonauts," mind explorers or adventurers in the psyche. Others were unknown hedonists, famous and obscure DJs, chart-topping and unknown pop singers, professors, doctors, writers, dancers, club patrons and owners, the merely curious, and devout seekers after the holy grail. Some hoped for a do-it-yourself psychotherapy, others to powerfully transcend the external world and their everyday selves. There were people who had become dependent on the mental effects of the drug and felt compelled to take it in huge amounts. Other contributors were involved in ketamine-based, psychedelic treatment methods for alcohol, heroin or cocaine dependence. A few sought to induce near-death or out-of-body experiences, to prepare for death, communicate with dead lovers and relatives or to take part in "magic spells" in a Carlos Castenada-like "pathway to power." Some had taken ketamine as victims of fraud, believing it to be MDMA (methylene-dioxymethamphetamine, a.k.a. "ecstasy") or cocaine. Others deliberately mixed "Super K" with MDMA or cocaine for the resulting effects on mind and body.

Many of the resulting dreams and realities appear in Part I of this book, "The Light Within," which concentrates on the effects for which this drug is taken in a non-medical context.

Several years ago, there was a risk that a book about the non-medical use of ketamine, which dealt with this subject in a complete way, might actually increase problems by spreading knowledge of the drug's strange effects. The situation has now changed dramatically, with nu-

merous reports appearing in all forms of media. Popular awareness of this drug has now reached *TIME Magazine*,[72] *Cosmopolitan*,[85] the *X-Files* and the film *Armageddon*, starring Bruce Willis. In late 1999, Ronin Publishing, Inc. released a brief popular guide, *The Little Book of Ketamine*, and on August 12, 1999, the drug was finally placed in Schedule III in the United States, after years of wrangling.[304] The "kit-kat," as this drug is sometimes called, has now been out of the bag for some time. Considering the profusion of recent newspaper, magazine, and television accounts, it is improbable that this book will be the selected reading of a person who has never heard of ketamine. It is unlikely to introduce the drug to a new audience.

This book will hopefully reduce harm by presenting accurate information together with harm minimization advice. Only attending to the most negative aspects of drug use may actually be less successful in protecting public health than helping people to fully understand the issues involved in deciding whether they will or will not use a drug.[414] With some exceptions, wholly negative drug education campaigns have often had little success. Most drug-related statistics rise and fall for reasons that do not appear to be linked to these large and expensive campaigns. The relative failure of the campaign to reduce smoking in young women is a well-known example. Constant warnings and "don't start" messages from the Surgeon General did not appear to have a substantial impact.[63] Smoking may eventually fall, but this particular campaign will not have been responsible. Few people have been left unaware of the "horrors of heroin," and yet the use of this drug increased dramatically between 1990 and 1998 in the United Kingdom.[55] It seems probable that a balanced, realistic approach towards ketamine use will at the very least do no harm, and may even have a more favorable outcome for public health than the exclusively ultra-negative approach ("ketamine causes nightmares and madness") that has been typical of many attempts at drug education so far. There are arguments in favor of describing the full range of experiences from the "9th rung of eternal hell" to "ecstatic meetings with the Overmind in heaven." The interests of public health are not necessarily best served





by presenting only negative and frightening accounts of drug effects. Such selective reporting also compromises our integrity. There is much in this book that may act as a deterrent to some potential users. However, there are also accounts that may make the drug seem attractive. This is because it is essential to have a real answer to the question: "Why do people do it?" It is difficult to treat a person who is dependent on ketamine without an answer to this question, and it is almost never to be found in the pamphlets of street drug agencies that have often presented ketamine as an extremely unpleasant drug that only a jaded, nightmare-seeking masochist would take on purpose. Since use of ketamine is increasing, it would seem that this unbalanced approach lacks credibility with many potential and actual users. It is difficult to help someone who has a problem with this drug without understanding both the positive and negative aspects—the light side and the dark side of its effects.

The relative failure to improve public health by focusing solely on the negative effects of drugs has led to a new approach called "harm minimization." Harm minimization accepts the evidence that many people will continue to take drugs even when they are fully aware of all the dangers involved. The method seeks to minimize harm through providing safety advice and other means, and hopes that there is a level at which the person may follow this advice and accept help, even if they do not abstain completely. Two examples of harm minimization are the legal prescription of heroin,[81, 570] and the distribution of clean needles. Providing addicts with drugs of known purity and a safer method of injecting them decreases the risks of death from overdose or of contracting diseases that can be transmitted via dirty needles, such as AIDS. Harm minimization is a recurrent theme in this book, and an important reason for its publication.

Most of the requests I have received for information about ketamine came from the concerned friends and families of frequent users, drug education and treatment agencies, worried partners, and people wondering how to treat certain problems, rather than from potential or actual users. Users generally felt that they learnt far more from the

drug itself than they could from any book, and they were more likely to offer their own opinions and experiences than to ask questions.

These following three letters are examples drawn from the many received, and illustrate the need for a book like this one:

> My boyfriend, as well as many of my friends, has a huge problem with ketamine. Their use of K originated about two years ago and has climaxed in daily habitual use, dependence on for easing the pain of daily life, and ruining of all close relationships. I speak specifically of my boyfriend (now ex-boyfriend after 3 years) who has literally lost everything and is thankfully entering rehab on Monday. Unfortunately, no one here, even in the rehabs, has much information on the drug; rather, they have many misconceptions about its use and effects…
>
> **Anonymous**, New York (December 1996)

> I am an emergency physician in Arizona. Over the last year I have treated three young men, previously heavy ketamine users, who had delayed reactions (flashbacks) to the drug weeks after stopping. I find that most physicians and even the poison centers know very little about this drug, let alone its long-term risks.
>
> **Doctor** (1997)

> I would be very, very interested in any advice dealing with K dependence. I have gone through an in-patient treatment center and I am currently living in a treatment house. The experiences I have had are just so profound. I have not been able to contact a single other person that is dependent on K. Most professional drug counselors are clueless.
>
> **K.U.**





All of these issues will be covered in Part II, "The Dark Side," which concentrates on dependence (addiction), "bad trips," nightmares and other mental and physical side-effects. Part II also suggests methods for treating ketamine-related problems. Important amongst these is an approach called "motivational interviewing." This involves considering both the pros and the cons of a compulsive behavior, in the short and long term. Only attending to the "cons" is often less successful than helping people to fully understand themselves, the nature of their ambivalence ("should I, or shouldn't I?"), and their decisions.[414] Providing accurate information is more likely than not to reduce drug-related harm.[571] Statistics for other drugs suggest that persons who have heard about ketamine and are determined to try it will do so regardless of negative education or the legal status of the drug. The balance thus tipped in favor of this book making a positive contribution to public health.

Some people believe that the two sides of the ketamine light/dark, yin/yang split can be brought together for healing purposes. Research involving the use of ketamine as an aid to psychotherapy is the focus of Part III of the book, "Unity."

The initials "K.U." after a quote means "ketamine user" (*i.e.* this is not a quote from the literature). Many different ketamine users were interviewed, not just one person. All possible efforts were made to obtain permissions to publish work. If we missed anyone, please accept our apologies and our assurances that identifying details have been removed.

I am grateful to all those who contributed their experiences, from the household names who gave up time to be interviewed, to the desperate people who sent me their darkest thoughts. I hope that this book can help.

PART I

# The Light Within

*The opposite of a correct statement is a false statement.*
*But the opposite of profound truth*
*may be another profound truth.*[171A]
**Niels Bohr**
Nobel Prize Winner for Physics

*It's the truth,*
*even if it didn't happen.*
**Ken Kesey**
*One Flew Over The Cuckoo's Nest* (1962)

Chapter 1

# K Waves and K Raves

*I've seen people take three, four, five shots in one night—booster after booster—just trying to get higher and higher and higher, sure that there was another "breakthrough" right around the next K wave.*[306]

**James Kent**
*The Ketamine Konundrum* (1996)

## The Parke-Davis Problem Child

While Sandoz is the company usually linked with psychedelics through LSD (lysergic acid diethylamide), the pharmaceutical giant Parke-Davis (now a Warner-Lambert company) has a much older connection with altered states of mind. The company obtained some peyote cactus (*Lophophora williamsii*) in the 1880s, and they added the dried buttons to their list of products for sale. Peyote contains the psychedelic drug mescaline. However, the real problem child sprang from their own womb in Michigan where the American pharmacist Calvin Stevens invented CL369 in April 1962. This occurred just before Timothy Leary left Harvard, John Kennedy was assassinated, and the United States sank further into the mire of Vietnam. CL369 became CI (for "clinical investigation," meaning that the pharmacologists had decided to take the drug further) 581, which was soon re-christened as "ketamine." Stevens was a professor at Wayne State University, but he was also a consultant in the Parke-Davis program. On August 3, 1964, ketamine was given to a human being for the first time by Edward Domino. That night, he described to his wife his utter amazement at seeing a person who was fully awake but "not there." It was Mrs. Domino who suggested the term "dissociative anesthesia." The hoped-for replacement for phencyclidine (a.k.a. PCP or "angel dust") had been found. The chemical structure of ketamine is somewhat similar to PCP, but ketamine is shorter-acting and far less toxic. Where possible, I have tried to avoid the doubtful but common practice of refer-

ring to PCP studies—or even worse, the dizocilpine (MK801) literature—to make a point about ketamine, as the effects and toxicity are too different. Nevertheless, all three drugs do belong to a peculiar group of chemicals called arylcyclohexlamines.

Ketamine is not related to heroin, nor is it a form of LSD, amphetamine, MDMA/ecstasy, or cocaine although it sometimes has effects resembling all of these. Ketamine is a complex psychoactive drug with a huge range of possible effects on consciousness, the brain, and the rest of the body.

The first accounts of ketamine's effects in humans appeared in 1965.[116, 399] It was found to be a potent psychedelic drug, and the effects were described as trance-like. The following year, ketamine was patented by Parke-Davis for use as an anesthetic in humans and other animals: an all-American, all-artificial drug—one that was not first synthesized in Europe like LSD, or extracted from plants like mescaline and psilocybin.[115]

Litigation and greed were invited to the christening. Although Stevens was a consultant to the Parke-Davis program, and was strongly steered towards the discovery by the team, he quietly rushed through a patent application without consulting the company. Belgium was chosen as the flag of convenience, resulting in the mysterious "Belgian patent of 1963." Parke-Davis was enraged and called in their lawyers. After an epic battle, a large payment was made to Stevens, and ownership of ketamine was returned to the company—hence the American patent of 1966.[398]

My interviews revealed that as early as 1967–1968 ketamine was already being used outside of the hospital and laboratory. The drug was being spread by some rogue "medicinal chemists" from Michigan out to the Florida coast under the names of "mean green" and "rockmesc." Ketamine has long been sold as something other than what it actually is, as the early name "rock mescaline" implies.

In 1970, the United States Food and Drug Administration (FDA) approved ketamine for use in children and the elderly. The early hospital trials recorded experiences both pleasant and unpleasant.[490, 513]





Like the medicinal chemists, some of the hospital staff involved in these trials took ketamine off the surgical table and out into the community. Knowledge also spread through other channels. A heroin-dependent person in Australia burgled a vet in the 1970s, found "this stuff called Ketalar®," and injected the liquid to see what would happen. He had never heard of the drug before, but belonged to a group of drug burglars who injected anything the label described as psychoactive. His next memory was of floating somewhere above the roof, on what he described to me as an "instant trip." In Argentina, "ketamina" was used to regress clients back to the womb so that they could be reborn into the brave new world (1974).[155] In South-East Asia, helicopters weren't the only vehicles for hovering over the rice paddies. Some Vietnam veterans went home with a new outlook on "anesthetics." (The drug is mentioned in the odd episode of the TV show *M*A*S*H*.)

By the end of the seventies, the FDA was worried about ketamine on the streets.[141, 542] FDA worries were heightened further by the publication of two books in 1978: *Journeys into the Bright World* by Marcia Moore and Howard Alltounian, M.D., and *The Scientist: A Novel Autobiography* by John Lilly, M.D. These authors were highly-educated psychonauts who traveled to the edge, and sometimes fell off it to land face down in the pool. Their stories are considered in detail in the next chapter, "The Priestess and The Psychonaut."

The last two decades have seen ketamine move into the mainstream with the growth of techno clubs and raves. In the United States, the drug has now spread throughout the hinterland from initial hubs in New York and California. The office of the drug czar added ketamine to the "emerging drugs list" in 1995, noting use across the country,[48, 72] while the DEA (Drug Enforcement Agency) web site and the *Forensic Drug Abuse Advisor* warned of "ketamine abuse increasing" in 1997.[13, 105] New York made ketamine into a controlled drug, but the bodies still hit the deck at Twilo and other clubs until the Mayor's zero tolerance approach started to drive dance drug use underground—the opposite direction to changes occurring in Europe. In August 1999,

ketamine became a Schedule III drug at the federal level across the United States.

In Russia, ketamine has been a significant street drug in Moscow for several years. The Muscovite street scene is fairly tough, with a preference amongst teenagers for i.v. (intravenous) injection of the liquid over taking the drug by safer methods. The drug is sometimes prescribed there as a painkiller for the seriously ill. There are stories of elderly patients selling their medicine on the street for some extra cash.

Non-medical use has also become more prominent in Western Europe, South America and the Antipodes, amongst other regions.[97, 215, 247, 620] In 1996, London magazine *Time Out* featured an article on future drug fashions that dismissed ketamine in one line as a has-been drug of 1992.[76] However, almost all of the obscure "brain blasters heading our way" mentioned in the *Time Out* article never made it anywhere near the main stage. It was ketamine that became a sought-after drug in its own right. *Time Out* changed its mind in 1999, when it stated "ketamine is the new E" (MDMA) in its 1999 preview, and included "Special K" (named after the Kellogg's Cornflakes brand) in "The Best of '99" list on its cover.[587] By April 2000, *Time Out* contained a personal account of ketamine use from a television producer, who was quoted as saying that everybody seemed to be "taking K," and that it was a "really great positive experience."[510]

In the late-'90s Berlin party-scene, a new aspect of non-medical use of ketamine arose: the majority of users told me that they were taking ketamine not only for psychedelic purposes in a home-setting, but even using ketamine more often on the dance-floor, by sniffing because of its stimulant properties.

The spread from the "New Age psychedelic group" in the United States into the 1980s club and party scene was partly due to the widening tastes of stimulus-hungry clubbers, drawn to such strange effects as hovering above the dance floor. A New York user, "D," first read of the drug in the 1983 book *Chocolate to Morphine* by Andrew Weil, M.D. and Winifred Rosen,[615] which was in his high school library. There is a section in the book called "Ketamine Summer," written by a lab worker who read about dreams and hallucinations in the Ketalar® data sheet, and then injected the drug daily for the rest of the summer. "D" had a friend whose father was a vet, and "D" himself ran a nightclub and was already involved in supplying drugs. Thus another point of crossover from animals to the dance culture was established. Dr. Weil's view is that there are no inherently good or bad drugs, just good or bad uses.





One of the first mentions of ketamine in the popular drug literature was in an early issue of the magazine *High Times*. Another early mention was in the *Fabulous Furry Freak Brothers 4* comic strip, drawn in 1975 and still in print. A Los Angeles rock-star from a band called The Spoons offers some lines of powder to the Freak Brothers who eagerly snort it, believing it to be cocaine. Only then does the Spoon reveal that the powder is not cocaine but ketamine, which is described as "very decadent" and a drug that will make you have "a three-day nightmare!" The trio are last seen driving down the freeway in their van pursued by mythical beasts and monsters.[537] The authors, Shelton and Sheridan, may have made the common mistake of confusing ketamine with PCP, which has much longer lasting effects (although even PCP doesn't last three days). Snorting a "bump" of ketamine will rarely have results lasting for more than an hour.

## Dance, Trance, and Animal Magic

> I was a phenomenal dancer on K. People would often watch me in amazement shaking their heads in disbelief—when I wasn't K'd and even when I was on other drugs I could never remember how I did it.
>
> **K.U.**

The dance culture (raves, clubs, parties, the underground, *etc.*) began in several places at the start of the 1980s, including the nightclubs of New York where snorting "a few bumps of K" soon had an estab-

lished following. The style traveled outwards from clubs such as Tunnel and Limelite to the alternative beach parties of Goa in India, where ketamine could be bought over-the-counter, to the hedonistic clubs of Ibiza, an island off the coast of Spain. It has been alleged that some persons involved with the Raj Neesh religious cult made MDMA at their communes in the USA and brought the drug over to Goa and other international traveler party-zones. If this allegation is true, then these cult members may also have spread the non-medical use of ketamine along the same routes. Both drugs were used by some members of cult-like groups led by self-proclaimed "gurus" in the late 1970s and early 1980s, in several countries. For example, in New Zealand at an "alternative healing center" led by a man called Bert Potter (who was eventually imprisoned), ketamine was one of several drugs found in police raids.

The early dance culture in Goa and Ibiza was closely associated with MDMA and similar drugs, amphetamines, low-dose LSD, *Cannabis*, cocaine and, to a lesser extent, ketamine and other more exotic drugs. Although ketamine is an anesthetic, it can be a powerful stimulant at lower doses. European and American DJs returned home with some new ideas and some new drugs. In the United Kingdom, for example, these returnees launched events involving thousands of people, with names such as "Tribal Gathering" and "Return to the Source," combining images from the earlier psychedelic era with new technology.[77] A movement that began with free parties in warehouses, barns, and fields rapidly grew into a gigantic enterprise: very much overground, big money, superstar DJs, mainstream radio, and megamerchandising. In Europe, a small but surprisingly noisy (considering the effects of the drug) "K crew" has floated through the free parties almost from the beginning (and still performs its wild rites at obscure free raves on Welsh mountain tops), but many partygoers have taken the drug accidentally in a pill. This situation is changing as ketamine becomes a sought-after drug in its own right, increasingly sold as a powder or liquid.[91]





In the U.K., the dance culture became so large that it cut into profits in the liquor industry, which was already concerned about a major decline in "live entertainment" (by which it meant people going out to see pub bands and drinking large amounts of beer). Free partygoers often drank water and avoided alcohol, which was seen as "unmellow" and linked with violence. Alarmed lobbyists, amongst other vested interests, encouraged the Government to write a section into the 1994 "Criminal Justice and Public Order Act,"[59] prohibiting unlicensed outdoor parties where music with "fast, repetitive beats" was played.

The Act was constructed in such a way that it would not end the dance culture, but aimed to ensure that the alcohol industry took a slice of the profits. As required by the Act, the major party organizers obtained licenses and hired lawyers. The movement then grew even faster with the new legitimacy of licensed raves. The Act put the management of parties onto a firm business footing, forcing them into clubs and venues where alcohol was sold. Major beer manufacturers now sponsor some of the larger events. Thus the liquor industry found an answer to the decline in "live entertainment" through a union with the dance culture. With the profits of all sides assured, the dance culture is now a feature of mainstream entertainment. One result has been that the no-holds-barred, hedonistic style of drug use linked with raves moved much closer to the mainstream of society along with the music. By banning raves from barns and paddocks, the Act increased the spread of all the "dance drugs" into the mainstream. By 1995, the United Kingdom had one of the world's highest rates of low-potency LSD (under 50 micrograms per dose) and MDMA use in persons under 30—at least twice as high as United States figures.[406, 482]

The "normalization" of dance drug use has now gone a step further, with the relative decline of some clubs in favor of fashionable bars that feature both the beats-per-minute as well as dealers in the immediate vicinity offering a range of drug choices. The alcohol/entertainment industry now profits from some ancient advice: if you can't beat them join them (or at least turn up the beats). A major impetus behind the development of these bars is that they are sometimes not so

heavily policed, although this is likely to change.

Attempts have been made by dance magazines to compare ketamine with MDMA. As ketamine was first made in 1962, it is a much newer drug than MDMA, a patent for which was first applied for in 1912, despite its inaccurate media description as a "designer drug."[518–9] In fact, ketamine is far more like a deliberately tailored, made-in-the-lab "designer drug" than MDMA. Ketamine has often been presented as a mysterious drug about which little is known.[402] While it does have mysterious aspects, a search of the Medline database will produce over 6,500 scientific and medical reports containing the known facts about ketamine (including numerous clinical trials in humans), versus a current total of about 800 for MDMA, with almost no sanctioned clinical trials in humans.

### The Spiritual Quest

In quieter spaces, use of ketamine may reflect the growing drive for spiritual experiences in what some observers have seen as a materialistic and spiritually empty era.[112] However, some of these spiritual seekers have specifically avoided ketamine because it is totally artificial. These groups prefer to take drugs in plant form, or to take substances such as LSD and MDMA that are perceived as having close relatives in Earth's vegetation.

In recent times, the renowned ethnobotanist and writer, Terence McKenna, has largely been the chief promoter of this philosophy.[405] Tragically, he developed a malignant brain tumor and the most advanced and artificial medical techniques (including anesthetics) available were only able to prolong his life for a few months after being diagnosed. His philosophy is related to ideas about the "soul" and "personality" (or deity) of plants and certain drugs. Regardless of one's opinions concerning this philosophy, it is highly likely that substances with ketamine-like actions will eventually be found in plants, and this has probably taken place already. Ibogaine, extracted from the roots of the African tree *Tabernanthe iboga*, has some very similar actions





in the brain to ketamine and high doses may produce a state resembling dissociative anesthesia.[35, 66, 480–1]

The modern dance culture has had some interesting crossovers of psychonauts who first explored their consciousness during the "spiritual sixties." Timothy Leary, the famous psychologist, spent some time at the New York Palladium snorting ketamine. However, his first impressions were formed with Dr. John Lilly and "experiments in voluntary death,"[352] and he eventually headed back that way to use the drug as part of his "designer dying" process—a preparation for his actual death from prostate cancer. Leary discussed my ideas about ketamine and the near-death experience in his final book *Design for Dying*.[354]

### "Is Your Kid on K?"[72]

The predictions that MDMA use would come and go as a brief fad were wrong, especially in Europe. The same is already true of ketamine. This is partly due to the link between these drugs and an ever-evolving musical soundtrack. The early conquest of commercial radio by the subversive "fast, repetitive beats" was followed by widespread colonization of lifts, ads, and the general culture at large. Ketamine use by DJs and other musicians has definitely affected this soundtrack. It was doing so from the very beginning of the dance culture, with persons linked to bands such as The Shamen using ketamine while on tour in developing countries. In the later '90s, the sounds of Tribal and DJ Danny Tenaglia, for example, were thought to match some aspects of the drug by clubbers.[91] In 1997, techno duo The Chemical Brothers released the best-selling album *Dig Your Own Hole* with a track called "Lost in the K Hole." The Brothers said that the title came from graffiti outside their hotel in New York.[251] A "K-hole" is a mental state where users sometimes end up, and refers mainly to the result of taking a dose sufficient to make coherent communication impossible.

The last track on *Colourform* by the Higher Intelligence Agency is more direct, and is called "Ketamine Entity." Another example is Mrs.

Wood's "K-Street D-tour" from her *Woodwork* album.[475] Ketamine may have also affected music at the pinnacle of the Top Ten in the late 1990s:

> Madonna once commented that she couldn't believe U.K. clubbers still preferred E to K. To sample the narcotic zeitgeist according to Maddie and many others, we must visit Manhattan's fabled club scene.[91]

Some people believe that the drug has the capacity to allow awareness to enter the "quantum sea," where it is possible for the "disembodied eye" to travel quicker than the ray of light mentioned in Madonna's 1998 album *Ray of Light*. This music has lyrics that are resonant with the perception of some ketamine users that they have found a universe within themselves, and the feeling of having "just come home" in the sense of a return from exile. The album has another lyric that has excited some curiosity, a reference to "a new drug" the singer can try. 1999 saw prominent United Kingdom breakfast-radio host Zoe Ball marry Norman Cook, internationally famous as DJ Fat Boy Slim, whom she met at the Manumission club in "Ibitha." Fat Boy Slim had spent many weeks at the top of British Music Charts and had this say about "The Breakfast of Champions:"

> Get the quantity right and it's incredible. Get it wrong and you feel like you're dying.[91]
>
> **Norman Cook** a.k.a **Fat Boy Slim** (1998)

Frequent users may see a message in almost every letter K they encounter. The Kula Shaker album *K* has been seen as a drug reference. However, the band insist that this is wrong. The album, they say, is so named because they are keen numerologists and K is the 11th letter of the alphabet, and thus possessed of special qualities in the Kula Shaker reality. The album has lyrics about hovering above the bed and flying to meet one's maker. This controversy brings to mind an older one





surrounding the Beatles' song "Lucy in the Sky with Diamonds," which had nothing whatsoever to do with LSD according to the band.[251]

Some newspapers reacted to ketamine in pop culture with articles such as "Party Craze for Cat's Drug,"[491] "Party Perils,"[412] "A Trip to Nowhere,"[569] and "Drug Users Adopt Bad Trip Anaesthetic,"[200] an article which claimed that "bored young people" were using the drug for the "bad trip experiences it can produce." After I wrote my harm minimization article for *The Face* in 1997,[251] *TIME Magazine* journalist John Cloud contacted me for an interview. He was writing an article with an ironic, post-modern perspective, titled "Is Your Kid on K?"[72] He concluded that there had been a large increase in use in the United States, and that the drug could be both beneficial and harmful.

1998 saw one of the most informative accounts so far about popular use, written by Andy Crysell for *Muzik*, the leading dance-culture magazine.[91] He noted that ketamine was "the most powerful psychedelic drug in the world" (certainly not true from a pharmacological standpoint) and wondered whether, everything having started with an E ("Everything Starts With E" was the title of an early acid house track), "it would end with a K."

Apart from media articles, increasing use of the drug can be seen by its inclusion in books such as the 1994 *Handbook of Psychiatric Emergencies*, 4th edition.[552] The *Handbook* lists ketamine-induced disorders in the index and recommends diazepam (Valium®) as the treatment, a listing not seen in the 1980s.

Ketamine received a name check in nearly all of the books that appeared in 1997 to mark ten years of the dance culture, such as the history book *Altered State: The Story of Ecstasy Culture and Acid House*,[77] *Disco Biscuits* (described on its cover as "new fiction from the chemical generation" and containing an amusing reference to ketamine in Martin Millar's short story titled "How sunshine star-traveler lost his girlfriend"),[413] *Disco 2000*,[38] and others.

In film, ketamine played a role in Alfred Hitchcock's *Family Plot*, has been used in video nasties,[535] and more recently in the 1998 blockbuster film *Armageddon*. To save the planet, a crew of roughneck oil

drillers must be sent into space to blow up an asteroid. Drug testing during their astronaut medicals turns up a galaxy of drugs, but only ketamine rates a mention by name. The film tells us that this man must be very wild indeed, as the drug is massively sedating and they use it to keep horses quiet.

In a 1997 episode of the TV show *The X-Files*, agent Fox Mulder was given a shot by a doctor to recover lost memories. The duration of effect was wrongly given as 6 hours to 3 days, possibly a result of the confusion with PCP (but more likely just fictional artistic license). Ketamine has also been repeatedly mentioned in a medical context on the TV drama *ER*.

## "Dodgy and Double Snide £"

> "those red and white caps were double snide —we couldn't move for two hours—none of us got anywhere near the dance floor. We were screwed to the floor."
>
> …Imagine what a headfry it could be if you take it without realizing…[360]
>
> *Lifeline Ketamine Pamphlet* (1996)

Ketamine has had a bad reputation in the European dance scene because it has often been swallowed accidentally as a "dodgy E," a pill sold as ecstasy (MDMA and its relatives), when it is not. The results of such a surprise attack can be unpleasant. Ketamine has been sold as MDMA because it was once a cheaper drug without serious legal consequences for the seller if arrested. In the past decade, the police have seized a large number of pills imprinted with various logos sold as MDMA that actually containing ketamine and/or ephedrine (plus or minus procaine). Sometimes manufacturers were charged with "conspiracy to offer to supply a Class A drug" (*i.e.* MDMA), and sometimes they were not charged at all. Some cases may have failed





because the pills might conceivably have been marketed as ketamine itself due to increasing demand for the drug, and it may have been difficult to prove otherwise. In other cases, the police had more success with the "conspiracy to offer to supply MDMA" charge. In the United Kingdom, manufacturers of ketamine pills with "ecstasy-like" logos on their surfaces can receive a lengthy prison sentence if the charge is proven against them, and taking refuge in the (currently) non-controlled status of ketamine in that country may not save them.

Ketamine for non-medical use is generally sold as a powder or as a liquid, rather than as pills bearing logos that are clearly associated with MDMA—although there have been exceptions. Manufacturers may find themselves struggling to explain to a jury why they chose an "E" as an imprint for a ketamine pill—not the most logical choice, the prosecution will argue, unless one is seeking to defraud the customer.

In the United States, ketamine is usually snorted like cocaine or injected. In medicine, the drug is usually injected although it has been administered by all other possible routes. The European practice of swallowing pills in clubs results in more bad reports because difficulties walking and talking sometimes appear before the effects on the mind become profound (amongst other reasons). When swallowed, the drug is absorbed into blood going to the liver first, and the liver changes most of the drug into norketamine before it can reach the brain.[181–2] Norketamine has more pain killing, numbing and sedating effects and is generally "more physical."[124, 225] The effects will also last much longer. If powder is taken through the nose, the mind is more likely to "leave the body" as the physical effects begin, and to attempt "re-entry" as these effects wear off.

The European situation has started to change. Some people seek out ketamine in any form, including pills, and there has been an increase in taking the drug nasally and by injecting. This is leading to a gradual change in attitude amongst some partygoers, fuelling demand.

### Breakfast of Chimps?

Ketamine has sometimes had a dark image in the clubs while being praised by medics.[588] This is a strange reversal of the usual situation in the War on Drugs, where generally the users praise and the doctors condemn—at least where psychedelic and empathogenic drugs ("love drugs") are concerned. Doctors give Ketalar® to patients in safe places where they can be nursed through the experience.[184] Psychedelic effects are sometimes reduced using sedatives, which knock the patient out completely (unconscious), rather than seeming to knock them out of their bodies (dissociation).[489] On a global level, the drug has been given to millions of people. The majority of this use is in developing countries, as it is an inexpensive drug and a doctor is not essential,[184, 308] although the latest data sheet states that Ketalar® should only be given by a specialist in a hospital.[466] This is often ignored in developing countries where there are few resources and "Keti" can be bought over-the-counter.

In most countries around the world, including the United States, the European Union, and Australia, Ketalar® is sometimes given as an anesthetic to children,[32] the infirm, the aged, persons having severe asthmatic crises, women who are giving birth or having operations, burn patients who may be given the drug repeatedly for days, and persons with chronic pain who may swallow it for years.[216, 316, 368, 466] It was used during the Vietnam War as a buddy drug and is still used this way in places like Afghanistan. A recent account by a medical student of his period abroad, published in the *British Medical Journal*, was called "Ketamine and Kalashnikov's."[499] Soldiers can inject wounded buddies (by the intramuscular route) secure in the knowledge that they will probably not stop breathing as a result of the anesthetic. The usual media classification of ketamine as a horse/cat/elephant tranquilizer is misleading. The drug continues to have a significant place in modern human medicine.[466] "Special K" is sometimes "The Breakfast of Chimps," but the claim that it is approved for animals only is false. It is also false that its use has been restricted to children or developing countries, and there is no absolute requirement to give extra





sedatives. The first use listed in the current data sheet is "sole anesthetic" for human surgery.[466]

Nevertheless, regardless of a good safety record in medicine, the situation in a club or at a party is very different from lying in a hospital bed with nurses and doctors nearby. Private homes hold their own dangers in the form of bathrooms, pools, stairs, and burning cigarettes. The world's most experienced personal user, Dr. John Lilly, warned recently that there was a risk of falling over.[72] Lilly himself almost drowned in a pool from which he was rescued just in time, and has had other falls since then.[363]

### Genesis and Exodus

In the United States, ketamine has been ordered legally from drug and chemical companies, stolen from vets, labs and hospitals, and imported from Mexico. The commonest brands are Ketalar® and Ketaset®. Until recently, most New York Ketaset® originated from Fort Dodge Laboratories, in Fort Dodge, Iowa. When it was made into a Schedule III drug, this situation began to change, with more being smuggled in from Mexico and other developing countries such as India. Shree Ganesh Pharmaceuticals in India offered (in 1998) to export "Ketotal" 50 mg/ml for U.S. $1 per vial, advertising via the web, until they were forced to stop exporting to the USA following changes in the law. In Europe, some ketamine has been purchased legally from chemical and pharmaceutical companies such as Astrapin—a German subsidiary of Biotest Pharma, there is some diversion and theft of Ketalar® from local sources, and a significant quantity is imported from India where it could still be bought over-the-counter when this book went to press.

The particular brand may make a difference to drug effects beyond mere folklore. Ketalar® contains a preservative (benzthonium chloride, an anticholinergic agent) that has a significant effect upon the brain,[123] and Astrapin's Ketamine-500® contains the potentially neurotoxic chlorobutanol, which has shown harmful effects in some ani-

mal experiments.[42] Pure ketamine did not damage spinal nerve cells on repeated injection into the spinal column of animals, but chlorobutanol (the preservative used in some ketamine solutions) induced "significant severe" nerve cell damage.[380] Some people have told me that ketamine freebase, produced by removal of the benzthonium chloride and salts from Ketalar®, produces a distinctly different experience. Anticholinergic drugs can cause "delirium" when taken at higher doses.

Parke-Davis recently launched a new product in Germany called S(+) ketamine. This is more likely to produce loss of consciousness, is a much better painkiller, and was initially claimed to be less psychedelic than the old mixture of S(+) and R(-) ketamine. However, it is now clear that psychedelic effects certainly do occur with the new product.[6, 113, 129, 607] The rumor that "they have a new ketamine without the psychedelic effects" is false. Throughout this book, the terms "K" and ketamine refer only to the equal and balanced mixture of shapes that was marketed as Ketalar®, Ketaset®, Ketmex®, Ketotal®, Ketamine-500® (Astrapin) and Imalgen®, a veterinary product made in France and sold in countries such as Mexico. Some users consider Imalgen® to have fewer unwanted side-effects in comparison with the other brands listed above. Ketamine brands are also manufactured in countries such as Brazil and China.

### The Law

Almost 40 years after it was first invented, Ketalar® is still to be found in many hospitals and is still an uncontrolled drug in most countries, although this situation is changing. Even in India, there are recent indications that the police in Goa are treating dried ketamine powder as a banned substance.

Some American agencies have recently sought increased penalties for possession and sale of ketamine, on the basis that it is a "date rape" drug. Ketamine was finally placed in Schedule III at a Federal level in August 1999. At that time, in the United Kingdom ketamine was not controlled by the Misuse of Drugs Act, but sale and manufacture were restricted by the relatively toothless Medicines Act. The police thus tended to ignore possession and prosecutions were rare, being generally limited to the "conspiracy to offer to supply a Class A drug (MDMA)" charge. This may have led to a false impression amongst the authorities (who tend to rely on arrest and conviction reports) as to the real extent of non-medical use.





There are reports of a very small number of people that were raped after being given a chat-up "line" of ketamine, having been told it was cocaine ("sedate rape"). Proven cases are extremely rare despite the attention given to this issue in the American media. These incidents should be seen in perspective. The drug usually involved in date rape (at least 50%), car accidents, suicide, and murder is alcohol by a very wide margin. Excess alcohol is the most likely explanation for a person having difficulty walking and talking in a public place, or attending a casualty department. The "K menace" is microscopic by comparison. Nevertheless, in 1996 a media focus on drugs and date rape led to a United States bill to control Ketalar® and Rohypnol® (flunitrazepam). Pressure from the industry soon removed Rohypnol® from this Bill.[72] Rohypnol® can be prescribed by family doctors, so controlling it would cut profits. With respect to ketamine, Parke-Davis did not officially oppose tighter restrictions. Nevertheless, it was suggested that congressional supporters of the industry also kept the status of this drug unchanged.[72] They may have feared a spread of control via the United Nations, reducing profits. However, new "date rape" bills appeared, and ketamine was eventually scheduled. 1999 began with a bill in Virginia to have ketamine placed in Schedule I ("Class A" in other countries) as a "date rape" drug. American law dictates that Schedule I drugs have no medical use. The bill was defeated, partly by pressure from groups who had been alerted via the Internet. These groups were largely made up of animal doctors, anesthetists, and surgeons who did not want to lose this valuable medicine. The Bill was discovered by checking the state's legislative web site (http://legl.state.va.us).

## The Doors of Dissociation

> How can we get the ideas we need to describe a realm where all intuitions derived from life in space-time become inapplicable?[616]
>
> **Steven Weinberg**
> Nobel Prize Winner for Physics
> Winner of National Medal for Science

The word "psychedelic" was coined by the English psychiatrist Humphrey Osmond, and means "mind-revealing" or "mind-manifesting." The term has since acquired many other cultural, historical, political, and artistic meanings. During the 1960s, it became linked with one particular side in a cultural war. It is unfortunate that the word has acquired this baggage, as there are few better terms to describe the effects of these drugs. "Psychedelic" will be used in this book to mean "mind-revealing." Its use here implies no beliefs other than that these drugs can reveal aspects of how the mind works. Nothing is implied about the value of these experiences. The word still appears in the formal literature, including the anesthetic literature, despite its associations with "drug mysticism."[43] A psychedelic drug is one that appears to tell us more about how the mind constructs reality, personality, a sense of meaning and sacredness, and other features of the mental landscape, without necessarily inducing a toxic delirium.[193] Examples of toxic delirium include the alcohol withdrawal state delirium tremens (the "DTs") and a mental state produced by plants such as *Datura* species and *Atropa belladonna*. The "observing self" may no longer be present in delirium, and the experience is one of confusion and malfunction rather than the sense of a coherent "journey" or "trip" with a beginning, middle, and end. However, the lines between these states are blurred. Sometimes psychedelics do produce delirium, and the mental states resulting from ingestion of *Datura*-like plants were—and still are—used by pre-industrial cultures for complex religious purposes, spiritual healing, and other rituals.[112]





Other terms can also be used, reflecting the purpose for which ketamine is given. When it is used to study psychosis the effects are described as "psychotomimetic." In the 1960s, the terms psychedelic and psychotomimetic came to symbolize a split between two camps on the matter of LSD. One side believed that LSD-effects could be beneficial while the other side stressed the potential for harm. Both of these terms are sometimes appropriate. Drugs with psychedelic effects can sometimes mimic psychosis, while psychosis can sometimes resemble psychedelic experiences. The revelations may concern both the normal and the abnormal functioning of the mind.

Drug companies have a different aim from the two camps above. They seek to reassure doctors and patients, so they describe Ketalar® as inducing "dreams" and "emergence reactions"—so named because they appear on re-entry from total loss of consciousness.[466] The effects can resemble lucid dreaming more than the paisley panoramas of the LSD-like drugs. The term "hallucinogen" can be used, but this ignores important effects upon mood and thought.[193] Some users consider the experience of an "ultimate reality" to be more important than visual changes. Lester Grinspoon, a psychoanalyst and associate professor of psychiatry at Harvard, and James Bakalar, a member of the Harvard Law Faculty, have the following to say:

> Many of the most powerful and sought-after effects can be called hallucinations or illusions only by stretching definitions to the breaking point or imposing a questionable social judgment. It is inaccurate to describe in this way experiences like…enhanced empathy, deep introspective reflection, reliving of old memories or participation in symbolic dramas, loss of the unity of body and self, quasi-religious exaltation, or ecstatic union with other people or the cosmos.[193]

Another term in use is "entheogen." This is a drug that appears to generate a spiritual experience, accessing a state sometimes referred to as "the divine within," Like the term "hallucinogen," this is limited in

focusing on just one feature.

It is sometimes said that ketamine is not a psychedelic drug because it has anesthetic and addictive properties not seen with LSD, DMT, psilocybin and mescaline. Nevertheless, it can access all of the realms of consciousness mapped out by psychiatrist Stanislav Grof on the basis of LSD research.[198] Timothy Leary observed that ketamine and salvinorin A (see later) were the most potent psychedelic drugs, activating the highest circuit in his model of the nervous system.[354] Ketamine is discussed in books with titles such as *Psychedelics Encyclopedia,*[565] *Psychedelic Drugs Reconsidered*[193] and *The Essential Psychedelic Guide,*[591] in which author D.M. Turner described this drug as the "ultimate psychedelic journey." The psychedelic effects will be covered in Chapter 3, "Dreams and Realities."

### Revelations

Drugs made by humans have been central to psychedelic drug research for over 200 years. In 1798, long before LSD was invented, Humphrey Davy was the first to explore the properties of the original dissociative anesthetic, nitrous oxide (laughing gas), discovered by Joseph Priestley in 1772. Davy tested the gas extensively on himself and his "artist and scientist friends."[193] The result was 600 pages of serious philosophy arising from the effects of the gas on the mind, with the title *Researches Clinical and Philosophical, Chiefly Concerning Nitrous Oxide and its Respiration*. Breathing nitrous oxide can result in euphoria, laughter, absence of pain, dissociation, out-of-body experiences, visions, and bright imagery. The experience builds towards a peak moment of transcendence at which the person may appear to leave their ordinary reality and enter a state of being in which their ego "dissolves." They may believe that they have come upon an ultimate revelation about the meaning of life and the universe, such as "opposites are the same," an insight often accompanied by ecstatic euphoria. The opium-dependent poet Samuel Coleridge described his nitrous oxide experiences as "the most unmingled pleasure" (the gas





can stimulate opioid receptors[173]). It remained "…nothing more than an esoteric entertainment for gentleman of the cultural elite…"[193] for 40 years, when it was introduced into anesthesia.

Benjamin Blood wrote his pamphlet *The Anesthetic Revelation and the Gist of Philosophy* in 1874. This was read by William James, Professor of Psychology at Harvard, who decided to try the gas himself. His subsequent writings on the implications of drug-induced states for understanding the mind, mysticism, religion, and philosophy are still widely considered to be among the best in the field.[238, 239] The urge to write philosophical tracts is probably the most serious side-effect of nitrous oxide. In 1998, this gas was shown to have a vital action in common with ketamine on the chemistry of the brain.[289] They both indirectly block the chemical messenger (neurotransmitter) glutamate from switching on cells via N-methyl-D-aspartate (NMDA) receptors, terms that will be explained later.

### Near-death and Near-birth Experiences

> The dope pushers connect their stuff with nothing less than God, infinity, eternal truth, morality…[609]
>
> **Nicholas von Hoffman**
> *We are the People our Parents Warned us Against* (1968)

The term "near-death experience" (NDE) describes reports of perceptions that awareness has left the physical body,[190] and (much less often) of going through a tunnel towards a source of light.[24] A smaller number report going into the light, and even fewer having some form of communication with the light that may be seen as a simulation of God.[497] In the same way, those who have experienced ketamine doses in the 100–150 mg range (by injection) may become convinced that they are dead,[75, 91, 502, 563, 565] or that they are having a telepathic communion with God.[247–9, 344] They may see visions,[43, 315, 329, 490, 509] and describe leaving their bodies,[138] dying, and entering other realities[198] and

alternative universes.[304, 306, 423, 591, 593] Old memories may emerge to the point of being re-experienced,[203] sometimes leading to a life review that is occasionally perceived as having moral, spiritual, and therapeutic value.[332] The loss of contact with the external reality and the sense of being part of other, "much more real"[363] and "fundamental" realities may be very strong.[171] Some people find this interesting while others may become disturbed. A NDE does not necessarily mean that the person is physically near death. This is usually not the case. Ketamine does not stop the heart and produce a situation like that in the film *Flatliners*. (The heart rate actually rises.)

Sometimes a NDE may involve re-experiencing in symbolic form another occasion on which one emerged into light from a tunnel: being born.[198] One of the more dramatic types of ketamine experiences involves the sudden conviction that there is nothing real except the self as a point of awareness floating forever in eternity, with no external world to return to. Life was but a dream, and this is the one reality to which the person has just awakened. This may be a symbolic memory of the womb, a time when we may believe ourselves to be the whole universe, and may have no sense of time or of the divisions between subject and object. The proposed limit for fetal memory is constantly being pushed backwards.[62, 131] Chapter 4, "Ketamine, Near-Death, and Near-Birth Experiences," explains the link between what may be described as ketamine "journeys" and the NDE in terms of the individual mind and brain. Chapter 5, "The Metaphorical Mental Modem," examines more radical theories that attempt to explain altered states of being using discoveries in quantum physics. These theories suggest that awareness can transcend its usual limitations to go into transpersonal fields and quantum seas—a perspective also linked to spiritual issues. The effect of ketamine on the brain can be seen as a metaphorical "mental modem," which can potentially "connect" the mind to "everything else," allowing a peek behind the curtain at the inner workings of this and other realities. These philosophies must be approached with care, as there can be a risk of collusion with the maladaptive beliefs of persons suffering from a





serious mental illness requiring medical treatment.

### Ketamine Dependence (Addiction)

If the mind is limitless as claimed by some people, then the exploration of its realms is never complete. Some users wish to return again and again, attempting to go further out and further in. LSD is too often harrowing, exhausting, and potentially painful (in a psychic sense) to be taken frequently. Ketamine, however, can be a painkiller in more ways than one, and is thus often less taxing than the "classical psychedelics" when used for frequent explorations. However, with repeated long-term use, the effects may increasingly come to resemble a mixture of cocaine, opium, *Cannabis*, and alcohol, and become less and less psychedelic. While tolerance is rapid and marked, the ability to remember the experience also fades. Most people give up at this point, but a few will continue to take the drug for the cocaine-like stimulation, the opiate-like calming (there are many opposites amongst the effects), the *Cannabis*-like imagery (which also disappears eventually), and for potential relief from anxiety, depression, and mental craving (although ketamine can also trigger panic attacks).

A lessening of the psychedelic effects can lead to the use of higher doses in an attempt to reopen the doors of dissociation. These attempts usually fail. Most users give up at this point, but a substantial minority continue with compulsive binges. This may be impossible to imagine for those left in a state of psychic shock after their first experience, darkly muttering "never again." There is little evidence of physical addiction in the sense of becoming physically unwell if deprived of the drug (as can occur in persons who are alcohol- or heroin-dependent). Ketamine craving is like that which William Burroughs, in referring to cocaine, called "an earth-bound ghost need."[50] These issues are the main focus of Chapters 6 and 7, "Ketamine Dependence (Addiction)" and "Escape From Planet K: The Treatment of Ketamine Dependence."

## Psychosis and Brain Damage

> Marcia, on 50 mg ketamine, i.m. (intramuscular): "There's not a psychiatrist in the country who will not tell you you have an insane wife." Howard: "Yeah, but that's under the influence of ketamine. There's a big difference. That's part of the problem with the book. The medical profession is going to say that what we're calling a state of samadhi, or satchitananda, is a state of insanity and that it's dangerous and people shouldn't be doing it." …Coming back to normalcy it seemed to me that there was no question but that I had been certifiably, even if only temporarily, insane.[423]
>
> **Marcia Moore** & **Howard Alltounian**
> *Journeys into the Bright World* (1978)

Sometimes, ketamine can produce certain effects resembling psychosis.[335] These effects can take a variety of forms. For example, the user may appear to be in a trance. Their eyes may move from side to side without seeing the external world. Limbs can move in strange ways and into bizarre postures. Despite an outward appearance of being "switched off" in some way, interviewing the person afterwards may show that the mind was staging an intense inner drama. While these people do not usually spring into action as may be seen in catatonic schizophrenia, they can suddenly sit up on the bed, speak a short phrase, and then lie down again without actually having "come 'round." Some people regard the odd movements and postures as a form of yoga and therapeutic bodywork. The "traveler's tales" on their return, are often very different from the accounts typically linked with schizophrenia. Many users are absolutely convinced that their ketamine experiences were real.[509, 542] They insist that the drug opened a door into other worlds. Sometimes participation in these "other worlds" can cause problems in this one, when the realities collide.

There is currently no published evidence of brain damage from ketamine in the human or monkey brain. Alarm was sparked by a report





in 1989 that ketamine could cause toxic changes in the rat brain.[454, 455] A decade later, there are still no published studies showing that these changes can be produced in monkeys or humans. This may explain why the FDA did not remove ketamine from the market. Some scientists still have doubts, although ketamine can actually *prevent* brain damage from low oxygen, low blood sugar, epilepsy, strokes, trauma, and heart attacks.[507, 527, 618] These issues are considered in detail in Chapter 8, "Journeys into the Fright World: Ketamine and Mental Health."

## Physical Safety

Ketalar® is relatively safe when used in hospitals, and for what is known as "office anesthesia."[183–4] There is a wide margin between the top end of the medical range and a lethal dose.[466] Psychedelic doses are usually only 10–25% of surgical doses, given by the same route for the same person. At these levels, it behaves more like a stimulant than a sedative and does not suppress the breathing or heart rate, although exceptions do occur.[595] The higher brain is switched on rather than shut down.[609] This state is different from being unconscious, where "the light bulb is turned off" and if the person goes too far they may stop breathing. At very high doses, ketamine behaves more like other anesthetics and will "switch off" parts of the brain and suppress breathing.[349] Ketamine also has a direct analgesic (pain-killing) action in the pain-transmitting pathways of the spinal cord.[207, 279]

Very few deaths by pure overdose have been recorded (*i.e.* in the absence of other drugs, especially alcohol). According to the Parke-Davis data sheet, there are cases of accidental injections with 10 times the amount required for surgery, with no obvious, lasting ill-effects.[466] This did not stop a "news in brief" item in a newspaper from stating that ketamine could cause heart attacks and death.[491] These were the only side-effects mentioned. While any drug can cause death in a few people, death and heart attacks are fine print possibilities here, especially in comparison with many other drugs and medicines. The real physical dangers arise mainly from the setting.[247] This drug can leave

the taker in a helpless state. Frequent users are more likely to die in an accident than from a direct physical side-effect. Safety issues are dealt with in Chapter 9, "The Body Electric: Physical Effects and Harm Minimization."

Nevertheless, despite the impression given by the Parke-Davis data sheet, a small number of deaths have occurred for which "ketamine overdose" seems to be the correct diagnosis. A woman of 49, whom I shall refer to as "Ariel," affluent co-owner of a New Age-style food supplements company, took ketamine daily for 7 months. She came to believe that she had an Angel lover called Gabriel "on the other side," who sent her messages (*e.g.* by forming clouds into heart shapes.) She was always very thin and had unorthodox ideas, but no known history of formal involvement with mental or physical health services was described to me by persons interviewed. She took ketamine by several methods, including a nasal spray with which she would dose herself throughout the day while attempting to run the company. She was able to remain relatively functional at work by sometimes also taking amphetamines and substances such as MDMA, which can markedly reduce ketamine's dissociation and allow one to continue walking and talking. One day she put on her finest clothes and her very best jewels, lay down on her bed, and went to "join Gabriel." The post-mortem noted that she weighed 6 stone (84 pounds) and had a minimum of 600 mg of ketamine per liter of blood, but no other drugs present. A syringe was found beside the bed. Her death certificate stated simply "ketamine poisoning," although anorexia may have also been a factor in bringing about her death.

In 1994, the Institute of Legal Medicine in Modena (Italy) reported "an unusual case of death by ketamine overdose," where "the drug's administration was a homicide for homosexual ends."[359]

### Ketamine Psychedelic Therapy

The theory behind ketamine psychedelic therapy (KPT) is similar to the basis for LSD-assisted psychotherapy as practiced in the 1950s





and 1960s. However, ketamine has many advantages over LSD, such as being much shorter-acting and having an accepted place in medicine. KPT has been used to treat alcohol dependence in over 1,000 patients with good results on long term follow-up,[332] and good results are also now being obtained with heroin-dependent persons.[334] The therapists create an intense, death/rebirth experience with potentially transformative power. The drug has thus been used to heal pain in the psyche as well as in the body, in an attempt to achieve unity between the conflicting aspects of a divided self. This is the main theme of the final chapter, "Psychedelic Healing."

Chapter 2

## The Priestess and The Psychonaut: Marcia Moore and John C. Lilly

*Marcia Moore: "Didn't the medicine tell you when to stop?"*
*John Lilly: "Yes, but some of us went on anyway."*[423]

*Journeys into the Bright World* (1978)

### Marcia Moore

Marcia Moore was a leading Harvard graduate and a world famous writer about astrology, yoga, and "past lives." She disappeared from her home on a freezing winter's night, aged 50, shortly after publication of *Journeys into the Bright World* in 1978, the same year that *The Scientist* by John Lilly appeared. Her skeleton was found about two years later in a nearby forest.

Dr. Howard Sunny Alltounian was listed as a co-author of *Journeys*, but the book consists almost entirely of Moore describing her role as "priestess of the Goddess Ketamine." I interviewed Alltounian in 1998. He now believes that ketamine is a dangerous and mentally-addictive drug when used for non-medical purposes. Moore was always promising him that she would stop taking it, but continued with secret use and arranged orders from the supplier by quoting the numbers on his medical license. The need to go outside the house and use secretly was a factor in her death.

She was 48 when she began her exploration of what she called the "aesthetic anesthetic," and was already famous as the co-author of *Astrology, the Divine Science* and *Reincarnation, Key to Immortality*. She had developed a technique she called "hypersentience," with which she believed that she was able to regress people to "past lives" for therapeutic purposes.

The cover of *Journeys* features a line drawing of the bi-hexagonal ketamine molecule on a purple background, with a heart mandala





inside one of the hexagons and an idyllic pastoral scene inside the other. *Journeys* begins with an urgent warning that "we are now living in the midst of Armageddon," that there is no time to be lost, and that ketamine may be the answer for the "psycho-spiritual regeneration of planet Earth." Similar claims were made for LSD in the 1960s.

Moore first took the drug in 1976, with some friends in Big Sur, California in a house above the Pacific surf. She was on a hypersentience lecture tour of the United States. Almost a year later, still on tour, she met Howard Alltounian while leading a regression workshop in Seattle. He was then the Deputy Chief of the Anesthesia Department at a Seattle hospital.

Alltounian saw Moore's photograph on a book jacket and decided, before he had ever met her, that she would make a "great wife." She regressed him during a workshop, and they concluded that they had met in "past lives." It was she who suggested taking ketamine to the reluctant anesthetist, who had never taken any before, and after two such journeys together they became engaged. The couple had been together for just a week. Her account suggests that the drug does not always have the "cold and unemotional vibe" described by some users:[306]

> …the spell was raying forth in a multihued canticle, a garland of love woven with bands of light… The next ten minutes or so… were the most emotionally intense part of the experience. During this interlude I had the unquestioning conviction that every one of the three trillion or so cells in my body was being melted down and reminted with Howard's initials upon it… From this day on that imprint will remain in every cell of my flesh, blood, brain, and bones. Where will it all lead?
>
> …it was gratifying to think that the Goddess Ketamine had put the seal of approval on our union…
>
> …The higher levels were also more abstract, being concerned with pure mentation. Only toward the end of a long gliding

> descent was emotion wrung out of me like water from a sponge. At the point of emergence I often did weep and my tears seemed to be drops drawn directly from a shoreless sea of inexpressibly deep feelings…
>
> …I also felt, and this has been verified by others, that ketamine works primarily on the "emotional body" whereas LSD is more mental in its effects. In yogic terms, ketamine works on the heart chakra…[423]

Nonetheless, Moore did experience "pure mentation" when drug levels in the brain were higher, and it was a considerable fall in the concentration that could make her emotional. This is consistent with the activation and deactivation of "thinking" and "feeling" areas in the brain, seen on scans by ketamine research scientist F.X. Vollenweider and his team.[607, 609]

The later chapters of *Journeys* describe a transition to taking the aesthetic anesthetic with less and less preparation and with ever-increasing frequency. Alltounian noted his wife's growing tolerance with some concern. This is the pathway to dependence, although she vigorously denied that the drug could be in any way addictive.

Moore wrote that the journeys appeared to have certain stages. The highest state was said to be the cosmic matrix, out of which she formed a new word "cosmatrix," described as a state of purely transcendent being. The cosmatrix was equated with *Sat*, which Moore described as "the first emanation from the power source which the Hindus call *Brahman,"* (the fundamental divine energy source from which everything is said to be derived). *Sat* is said to be "concerned with the essences of all forms…the will-to-be which brings all things into existence…" The next two levels, arranged in a descending hierarchy, were equated with the Hindu levels of *Chit* (realm of archetypes, of the blueprints and design making, Platonic ideals), and *Ananda* (the love which runs through the fabric of everything). The result is the everyday realm of the senses, which the Hindus call *Maya* (the





world of illusion). This is the level of the body and physical appearances.

In comparison with LSD, she found that ketamine produced a "higher, clearer and more veridical (*sic*)" trip. She noted that some people did not have psychedelic effects but just felt "disconcertingly whacked out." Alltounian generally voiced the darker side. He noted the rapid build-up of tolerance, hated feeling that his body was made of wax, and gave voice to one of the primary nightmares: the fear that you will never get back inside your body, or function normally, again.

Moore described how prolonged use resulted in fragmentation into subpersonalities, one of which was her role as the Priestess, another the more alarming Fire Lady. Her subpersonalities usually came in pairs of opposites such as Nun and Prostitute:

> …we came to see that "I-ness" can be a fractious hodgepodge of contending pressure groups or it can be like a rose window of diametrically opposite but harmoniously blending qualities…a beautifully balanced mandala shining from within…It also seemed evident that these subpersonalities can grow as though with a life of their own…With the integration of each contending faction a liberation of energy occurs. Thus, through alternating stages of fission and fusion we learn to tap the power source that we know as the all-seeing, all-accepting, all-compassionate Self.[423]

Use of the drug was at least several times per week at this stage, each session involving multiple injections. She finally acknowledged that she was building up a psychological tolerance (a rapid tolerance according to her husband), that she had been wrong about a lot of things and that she was "going to stay with it until it's tamed…I have to keep trying." She wrote that it vaguely entered her mind that she had greatly stepped up the frequency of her journeys. The boundaries of existence seemed increasingly permeable, the message of the Goddess being interpreted as "let the soul seep through." She felt that the texture of her being became more loosely woven, and that "the Light"

was indeed shining through. This was linked to a dramatic increase in apparent synchronicities (coincidences that are highly meaningful to the person who notices them) and what she interpreted as magical events. She had less need for sleep and more need for silence and solitude. In February 1978, she took the drug daily and by the beginning of March was only sleeping for three hours per night.

Moore went to visit John Lilly at his ranch in Decker Canyon, Malibu. She was astonished to find that he was, at that point, describing "Vitamin K" (his preferred term) as an "extremely dangerous" substance. Lilly had just been through a massive binge ending in a near fatal accident, and out of his original ten person study group, one had "driven his car off a cliff" (Dr. Craig Enright) and another had met an "equally lugubrious end" (Carol Carlssen).

> …John Lilly's last words to me were, "You'd better be damn strong if you're going to play that game."…As this book goes to press I have once again increased the doses.[423]

Moore disappeared from her house on January 14, 1979. Her husband spent a year searching for her, including journeys to Hong Kong and Thailand, places to which she had traveled in the past. Her skeleton was found in early spring, 1981, in the place where she had frozen to death. She had made a journey at night into the dark world of the forest, a potent Jungian symbol, curled up in a tree, and then injected herself repeatedly with all of the ketamine she had been able to find. That night the pond froze over, the moon rose, and the Fire Lady was killed by the ice.

> Marcia became addicted to ketamine and committed suicide. The drug is dangerous and its use should not be encouraged… I told her that it was a seductress, not a Goddess.
>
> **Howard Alltounian**, M.D.
> Interviewed by Karl Jansen (April 1998)





The evidence is more suggestive of accidental death than suicide, and bears similar hallmarks to a death from exposure in a person intoxicated with alcohol. There was nothing to indicate that she was depressed or that her conscious intent was to die, and she did not leave a note. Nevertheless, there may have been powerful subconscious elements that sought to go through the door for the last time, and never return.

*Journeys* is of particular interest in that it was written by a woman, as writing about psychedelic drugs is an area still largely dominated by men, with rare exceptions. Women are more likely to have psychedelic experiences when given ketamine than men, many of the classical anesthetic studies involved only female patients (reflecting the popularity of the drug in obstetrics and gynecology) and non-human females are also more sensitive to ketamine than males.[20]

### John C. Lilly, M.D.

John Lilly has played many roles in his long life. His characters have included those of the brain scientist, medical doctor, patient, writer, inventor, dolphin man, psychonaut, cosmic trickster, masochist, icon and, recently, he has come to be seen as a survivor. He spent decades exploring his own mind using psychoanalysis, flotation tanks, LSD, cocaine, and prodigious quantities of what he called "Vitamin K." The main account of these adventures is his 1978 book *The Scientist—A Novel Autobiography*.[363] This is a cautionary tale. The acknowledgments include thanks to the staff of five hospitals. There are several versions of *The Scientist*, and the following account is based on the 1978 edition.

The book begins with a creation myth, in which there is only pure consciousness. This then splinters into the various distinctions leading to matter and anti-matter, space and time, and the Big Bang. Parts of this pure consciousness separated off to assume an individual existence for a period. One of these parts was called John C. Lilly.

His childhood was marked by the ability to have spontaneous out-

of-body experiences, a vision of angels in a church, and the belief that he had two "spiritual Guardians." He gives an account of his own psychoanalysis as a young scientist, before he took any psychedelic drugs. There were three weeks of paranoid fear in which he believed that everyone was talking about him. He was terrified that something or someone would kill him, and felt that "they" were all planning to "do him in." Lilly sometimes believed that extraterrestrial beings could speak through him, and that he was carrying out a mission for them. He was having episodes of spontaneous dissociation. These unusual beliefs and abilities were present for many years before he took any Vitamin K, although he did use amphetamine as a student.

The brain scientist discussed an idea that involved putting thousands of microelectrodes into his own brain. The analyst questioned his reasons for doing such a dangerous experiment on himself, pointing out that it had elements of Christ-like martyrdom. This brings to mind images of William Hurt on the cross in the film *Altered States*, which drew significant inspiration from Lilly's life and work (as did the film *Day of the Dolphin,* and the character Wonko the Sane—the only man who knew where all the dolphins went, in Douglas Adams' book *So Long And Thanks For All The Fish*.[5]

The next step was to explore the mind/brain interface with electrodes and animal brains, seeking an answer to the question. "Am I a billion cells looking for a leader or has the leader taken over a billion cells, from which it can be independent?" The scientist came to believe that the second answer was the correct one. He began with the brain itself and then moved on to study his own altered states of being. In the 1950s he was a central figure in the invention of isolation-flotation tanks.[361]

A form of weightlessness can be achieved by floating in warm water to which a special salt has been added to create buoyancy. Conditions inside the tank are dark and silent, favoring exploration of what Lilly called "the deep self." The resulting sensory deprivation can result in out-of-body experiences,[361] although not everyone could go as far as the inventor did.





In the tank, Lilly could experience inner realities so brilliant and "real" that they could not be distinguished from events taking place in the outside world. A colleague spent several hours in the tank and nothing happened, while another became very enthusiastic. Some people were more likely to have trips in the tank than others were, just as only some people have ketamine-induced psychedelic experiences. The psychonaut concluded that reality is a matter of local custom, and that a person could choose any reality they wished in the tank. Once freed from the physical world, the laws of thought appeared to govern experience. He initially believed that he was creating everything he experienced, but later began to ask some radical questions about the nature of reality. Lilly concluded that interpreting all of his tank trips as "projections" was an arrogant assumption, and came to believe that he really had been contacted by other beings:

> After 10 years in the tank I formulated a working rule: whatever one believes to be true is true or becomes true in one's own mind, within limits to be determined experimentally and experientially. These limits themselves are, in turn, beliefs to be transcended. The limits of one's beliefs set the boundaries for possible experience…For the explorer there are no true beliefs…[364]

Lilly echoed Moore in seeing these altered states of being as a possible means to avoid war. He wrote that the people he was most interested in were the successful heads of corporations and bureaucracies, and wondered what would happen if they could realize that "their essences are hooked to every other essence in the whole universe." He thought that exploring the further reaches of human consciousness might be the fastest way to positive social transformation.[364]

Lilly described being approached by the security services. They wished to use tanks for re-programming ("brainwashing'). He was not enthusiastic, and felt that it was time to move on. In 1958, he took his last session in the tank at the National Institute of Health. He

reported finding himself beyond space/time, having a conversation with two beings who told him that they arranged coincidences on Earth and had a plan for him. The next step would be to study large brains that had been floating all their lives—dolphins and whales.

The Dolphin Man tried to communicate with these animals at an Institute built for him and his team in the Virgin Islands. There he constructed a new tank, which was filled with the warm waters of the Caribbean, and took his first psychedelic drug while floating—LSD, supplied by the National Institute of Mental Health. In 1963 he injected himself with LSD in the thigh, and entered his tank alone. The adventures that followed are described in his book *The Center of The Cyclone*.[362]

In the 1970s, the Nixon administration altered the direction of many research groups. Lilly decided to close down the dolphin research project and retire from government-sponsored work. Concentrating on the study of himself, he went to both Chile and the Esalen Institute in Big Sur, California to learn other methods of altering his states of being. He married his partner Toni and bought a house at Decker Canyon, 50 miles outside of Los Angeles, where the couple gave workshops. He built new tanks and developed his beliefs in "coincidence control centers" at the level of Earth (the Earth Coincidence Control Office, ECCO), solar system, galaxy, and cosmos. These ideas could be seen as a "practical extension" of Jung's theories about synchronicity and Arthur Koestler's "Roots of Coincidence."[296]

Lilly suffered from migraines while at Esalen and saw a young medical doctor, Craig Enright, M.D. To treat one of these migraine attacks, Enright injected Lilly with ketamine, resulting in an experience where Lilly believed that the beings told him to keep using Vitamin K for "educational purposes." He then began a prolonged binge lasting for 13 months, involving several close calls with actual physical death, and entry into what Lilly called the "overvaluation domain." In this domain he valued inner drug realities more highly than external realities. The book specifically states that one of the effects of the drug is addiction to the psychological changes occurring under the drug's influence.[362]





The adventurer injected himself in a toilet on an aircraft and stared into the mirror, believing that he was connecting with a solid-state civilization in charge of Earth's computers. He described receiving a message from the comet Kohoutek about a power failure at the airport just before such a failure actually took place, and later believed that he had received messages that in the future, Earth would be taken over by a malign solid-state entity. Messages also appeared to come from water-based life, especially dolphins and whales locked in struggle with the solid-state conspiracy. As in *Journeys*, there was a dramatic apparent increase in synchronicities in his life, particularly where dolphins were concerned.

The next chapter is called "Near Misses." Toni Lilly found the intrepid traveler floating face down in the pool. She resuscitated him and he was taken by helicopter to hospital. Internally, he believed that he was in the year 3001. An attempt was made to admit the patient to a psychiatric hospital but he refused and the binge continued. His wife tried to persuade him to seek help, telling him that ketamine had taken over his life. He said that he could stay off the drug without help, but she insisted and he was duly admitted to a psychiatric ward. Soon he returned home. He felt that there were "further parameters" of Vitamin K to be explored. For the next 3 weeks he gave himself injections almost hourly around the clock, secretly in the tank. He became convinced that he had to warn the government about extra-terrestrial intervention in human affairs. He flew to New York and installed himself in a hotel near Central Park, obtaining more supplies from friends. The messages told him to return to his former medical school. He flew there late at night, injected himself in a toilet and passed out on the floor. Lilly was picked up by an emergency squad and taken to hospital, where he was recognized by a doctor who knew him and arranged for his release. The injections continued, with Lilly attempting to call President Ford to warn him about the plot. He was again taken to the hospital but did not stay long. Despite everything that had happened, as soon as he got home he once again resumed his "explorations." His wife called this "seduction by K." Lilly called it "the repeated use trap."

The levels of being that Lilly defined had an astronomical, science-fiction aspect. The scheme was based around contact with other beings at coincidence control offices. There was internal reality (the level of "I"), extra-terrestrial reality ("they"), network of creation ("we") and the unknown, achieved with gradually increasing doses, or multiple dosing every 20 minutes.

A danger of automatic behavior was noted, occurring when parts of the brain continued with their activities out of contact with the observing ego. For this reason, the "first prime directive" was formulated: another person must always be present during these experiments.

The injections continued on a daily basis. Lilly began to prefer his inner journeys to his relationships with the external world and other people, and had long since abandoned the first prime directive. At first he believed that he was being programmed by the two beings for good purposes. He then became convinced that he was controlled by evil solid-state entities. Yet another month followed during which he injected himself hourly for 20 hours per day. He saw messages for himself on television and was still convinced that he was a visitor from the future. To those watching from the outside, he became childlike and disinhibited. The Time Traveler forgot that he had broken a shelf by falling against it the night before. Word went out that he had a serious problem, and his sources dried up. *The Scientist* then states that Lilly went through a period of severe psychological withdrawal. He insisted that ketamine was essential to his studies and a situation he had under control, but those around him were no longer convinced.

Unable to have his "Vitamin," Lilly obtained a related drug and injected himself with it when his wife was out. He forgot that this other drug takes much longer to start, and went for a bike ride. Racing down the mountain road on his bicycle, "in the state induced by the chemical, his interlock with the external reality became disconnected."[363] He was hurled into space, breaking several bones and puncturing a lung. He was in the hospital for 3 months. According to the book, there was then a meeting of the beings who discussed his training and decided to free him, at the age of 61, from the necessity for





using any further drugs. However, it was not to be and he was still using ketamine at the age of 83, surviving on inherited wealth, the close attention of personal assistants, and (in his opinion) "favorable coincidence control."

Did ketamine make John Lilly go mad? It is clear from *The Scientist* that he had a substantial, pre-existing history of unusual states of being. A true drug-induced psychosis persists for a period once the urine is clear of active drug metabolites.[479] In some very heavy users, norketamine (also an indirect NMDA-PCP receptor blocker) can take at least 7 days to leave the body.[181–2] Lilly swiftly retreated from the "over-valuation domain" after being cut off from his supply, and he was never in psychiatric hospitals for long. The states in which he was taken to hospitals, received messages, tried to ring the President, *etc.* may all be described, from the belief system of modern medicine, as "ketamine intoxication with paranoia" rather than a true "drug-induced psychosis," although there are certainly many psychiatrists who would prefer the second diagnosis for a case like this.

Many people have experienced Vitamin K for prolonged periods without encountering other beings in charge of "coincidence control," although reports of a sharp rise in synchronicities during and immediately after a binge are relatively frequent. Most never received messages from solid-state entities, evil or otherwise (although talking to the furniture, overhead light bulbs, lava lamps, and computer screens is commonly reported, these "entities" do not usually answer back), and never experienced paranoid episodes lasting for more than a few minutes.

The meta-realities described in *The Scientist* may be most usefully seen as Lilly's "personal trip." Some have suggested that John's "they" and "we" levels represented fragmentation of his own personality into parts that became semi-autonomous. This explanation could be given for many ketamine effects:

> I "watched" as the fundamental sparks of my mind came together and bubbled up to a surface level of consciousness where

> the simple act was finally executed. It was as though I was experiencing the workings of my mind from both a participant and observer viewpoint…At no time did I experience any anxiety or negative feelings. Mostly fascination. No aliens either, but I can see how one could mistake the redirected experience of one's own thoughts as a visit from something external. I've never met aliens on DMT either…
>
> **K.U.**

The Scientist's ketamine experiences often had an inhuman, cold and computer-like flavor, in contrast to the earthy warmth and emotion of Moore's adventures with her "Goddess Ketamine." *Journey's into the Bright World* has been unavailable for many years, but Lilly's books are still in print and widely read. They may have contributed to the reputation the drug acquired as cold and inhuman. The author himself was rather distant and "highly indifferent" before he starting using ketamine, while Moore was deeply concerned with love, emotion, her new marriage, and the Earth, rather than the chill of extraterrestrial space. Lilly spent much time alone in his isolation tank, and the drug may have magnified aspects of his usual personality at that time of his life. Some psychologists believe that the capacity to have spontaneous out-of-body experiences, as Lilly did as a child, is linked to a particular type of personality that is labeled as "schizotypal."[401] The modern definition of "schizotypal disorder" is not the same as schizophrenia. It is seen by some people as a more "political" diagnosis as the features include a slice of the beliefs and behaviors that partially define "alternative spirituality" and the New Age perspective, such as believing in magic and telepathy.[628] It is by no means certain that this diagnostic category will stand the test of time.

### A Discussion with John Lilly: May 14, 1998, in Hawaii.

In May 1998, John Lilly was 83 and basking in the Hawaiian sun—a survivor melting any last fragments of Black Ice. We had a discussion at his house in Maui about some of the issues raised in this book. In the course of the afternoon it became clear that he still has an acute intelligence. He was lucid, and able to quote from his books and those of others at some length. On that occasion, there was no clearly obvious problem with his attention, concentration, and short or long-term memory. He was in good spirits, fluent, and his doors of perception were not unhinged. The overall impression was of a kindly, good-humored eccentric with some unorthodox beliefs and unusual habits, who did not take himself too seriously. It seemed most likely, from the accounts given by Lilly and others of his own habits, that those occasions when he was observed to behave as if he had "dementia" were probably due to ongoing use of one drug or another (including alcohol). It appeared as though when he was relatively drug-free, if there was a problem at all, it was likely to have been a reversible situation rather than a permanent deficit.

He was spending most of his time reading a variety of books, and was still actively writing, speaking, and pursuing various interests on an international level. At the time of my visit, preparations were being made for travel to a meeting in Paris, and he had recently returned from the International Conference on Whales and Dolphins in Japan. He was reading Einstein's *Bridge* and Candace Pert's book about peptides, *Molecules of Emotion*.

The following are extracts from our discussion. Many of these answers were given with a mischievous smile, and with tongue partly in cheek, by a person who was being deliberately playful with language and realities. Lilly lives by his own statement that there are no true beliefs, and is unperturbed by contradictions between the opinions he has expressed on different occasions.

**Jansen:** Many persons do not encounter Beings when they take ketamine, or coincidence control officers. How do you explain this in terms of your theories?

**Lilly:** You don't have to have any concept of Beings. When you take the drug you enter into their consciousness. You don't have to see

them or know them as Beings. They engage your mind. Before matter, energy, there was consciousness without an object. Out of that came Beings.

**Jansen:** Do you think that there are aliens amongst us?

**Lilly:** No.

**Jansen:** What do you think will happen when you die?

**Lilly:** I don't know. I'm looking forward to finding out. I'd like to reincarnate with 5 other people in the brain of a sperm whale.

**Jansen:** What are your views about the use of ketamine in clubs?

**Lilly:** It's stupid. They are unthinking people.

**Jansen:** What is the most unpleasant experience you have had on ketamine?

**Lilly:** I was reading a book that suggested that you should explore your worst fears. So I took 150 mg and was put in a place where they surgically removed my penis. Afterwards I thought: who the hell is running the show up there? Bunch of kids?

**Jansen:** What was the most positive experience?

**Lilly:** I couldn't say. They are all so different.

**Jansen:** Have you ever had panic attacks on ketamine?

**Lilly:** I haven't experienced any panic attacks on ketamine.

**Jansen:** Do you think it made you paranoid?

**Lilly:** It never made me paranoid.

**Jansen:** What about your fears concerning the solid-state plot to take over the world?

**Lilly:** Well, they were just ideas I was having. I remembered that I am solid state myself! (Squeezing his leg to demonstrate his solidity.)





**Jansen:** Do you think that you were or are addicted to ketamine?

**Lilly:** Addiction to me is a lousy concept. People take ketamine because they like the effects. If they don't like the effects, they stop taking it. I took it for 22 hours a day for 6 weeks once, because I wanted to. When I wanted to stop, I stopped.

**Jansen:** What are the side-effects that bother you the most?

**Lilly:** Other people and their judgments. There's nothing about it that really bothers me.

**Jansen:** What have the good things been?

**Lilly:** Encounters with super-human beings who told me to go back and learn what it means to be human.

**Jansen:** Are you glad or sorry that you became involved with ketamine?

**Lilly:** It saved my life. It got me off cocaine. I took cocaine to explore Freud's theories about sexuality. Freud's sexual theories were based on his cocaine use. Some of his writings about cocaine are in the Library of Congress and they are sealed. The public is not allowed to read them.

**Jansen:** Do you think that ketamine has affected your cognitive function?

**Lilly:** No. The mind is not operating with cells alone. It operates with subatomic particles. If I reduce my consciousness to the Planck length [after physicist Max Planck] of $6.624 \times 10^{-27}$, I can go anywhere in the Universe. [This may sound bizarre to those not familiar with the application of quantum physics to understanding the mind. The ideas he expressed here are quite consistent with those held by an increasingly large number of people who believe that consciousness is based on quantum events. Oxford physics professor Roger Penrose discusses this perspective in his best selling 1994 book *Shadows of the Mind*.[469] In brief, Lilly expresses the view that ketamine, the tank, and related methods can reduce consciousness to the Planck length, at which "any-

thing" becomes possible and there is no specification of the present condition. There is only a wide-open potentiality in the future. Alternative realities become possible.]

**Jansen:** Are you still using the tank?

**Lilly:** I stopped using the tank. I've retired from all that now. I didn't want to be confined. I read books, watch films. I am writing another book at the moment.

**Jansen:** What would you like to be remembered for?

**Lilly:** My work with dolphins. What I like about being 83 is that I can talk to you about all this and remember…There are no discoveries, only revelations. Humans try to find out what God did, how it was done, and to reproduce parts of it.

We discussed the deaths of Craig Enright and Carol Carlssen in 1978. Craig Enright's death involved going over a cliff in a car. It is my understanding that Lilly did not believe substances to have been directly involved, but that the accident was due to a problem with the car. He believed Carol Carlssen to have died from an overdose of alcohol and ketamine taken together. In an interview in 1993, Lilly explained why he thought he had survived:

> I'm spending my time trying to learn what it is to be human. That's why ECCO keeps me around. One day I asked, "What is it to be human?" You know what they said? "To laugh more."[46]

His sense of humor continues to improve. The "water-based life" part of his mind appears to be winning out over the "solid-state computer" part, and Lilly's books about dolphins and whales were important in swinging public opinion against the slaughter of marine mammals. He was known as "the dolphin man" many years before he started using ketamine. This is a positive legacy for which he is still well regarded in the international arena. It is also clear that *The Scientist* is a





cautionary tale. It does not promote the use of Vitamin K. Potential copy-cats should note that most people would consider the author to be alive today due to very good luck, rather than guardian angels, that it has been possible for him to live his life in this way because he came from a very affluent family and was of largely independent means, and he also had, and continues to have, the close attention of supportive caregivers and personal assistants. The Scientist was also very intelligent at the outset and had greater cerebral reserves to draw upon than the average person.

### Yin and Yang

The principle that the core of everything is either a particle or a wave, and both when we are not looking, lies close to the heart of quantum physics. Nobel Prize winner Niels Bohr, who promoted the principle of complementarity, adopted the black and white yin-yang symbol as his coat-of-arms when he was knighted by the King of Denmark. Some people believe that these plus/minus subatomic realities are reflected at all levels of the cosmos, including human thought. As noted by another Nobel Prize winner, James Watson, important things in biology also come in twos. He was referring to the two complementary strands that make up DNA. Marcia Moore wrote of subpersonalities that were polar opposites of each other. Lilly and Moore themselves sometimes appeared as polar opposites: male and female, ice and fire, thinking and feeling, Space Father versus Earth Mother, the physical Vitamin K and the etherial Goddess Ketamine, the science fiction psychonaut and the mythological priestess, distant future versus distant past, particle and wave, yin and yang. They could almost have been taking different drugs with opposite effects. Ketamine itself is one of the most split drugs ever discovered. It both wakes people up and puts them to sleep. It over-excites the calm brain and calms the over-excited brain. Ketamine is both damaging and protective, pro- and anti-convulsant,[431] addictive and a treatment for addiction. It is given during birth and to ease the passage into death, while on an-

other level it can produce both near-birth and near-death experiences. The drug appears to take some people much further in than they have ever been, and yet they find themselves much further out. Ketamine is a source of both healing and harm, integration and disintegration. It is still usually given as an equal mixture of positive and negative, right-handed and left-handed, R(+) and S(-) molecular forms. The experiences Lilly described had an inhuman, cold and computer-like flavor, infused with the chill of science and space, contrasting with the earthy warmth and emotion of Moore's adventures with the Goddess. *Journeys into the Bright World* almost vanished as Alltounian felt that the book should be buried with its Priestess, especially since it also buried his career. But *The Scientist* is still sold by Ronin Publishing, Inc., strengthening the misconception that ketamine is always "cold and inhuman." We should not ascribe "coldness" or "warmth" to particular molecules, as these are clearly attributes of their users. This is a matter on which my opinion differs from that of the "molecular mystics" such as Terence McKenna, who ascribed personalities to the molecules themselves (especially DMT and psilocybin in his case), and Rupert Sheldrake whose idea that each molecule has a "morphogenetic field" carries similar implications,[536] and was used by McKenna to support his arguments.[405]

I had a discussion with McKenna late at night in his house outside San Francisco, in 1989. He wanted to know about *kratom* (*Mitragyna speciosa*), a recently rediscovered tree in Thailand with potential as a treatment for opiate dependence,[286–8] but I wanted to know how he reconciled his antipathy towards human-made drugs with the many claims that these drugs had produced spiritual experiences. He felt at that stage that ketamine was like an empty building because not enough people had been there. It was, according to McKenna, new and artificial, as it had not been taken by shamen for thousands of years like "magic mushrooms." However, most people who take ketamine do not find an empty building. Many have reported finding "everyone who has ever lived" there. The newly synthesized LSD-25 was not described by Albert Hofmann as being "like an empty building" either.[567] If "morphogenetic field" theory has any validity (and more work needs to be done on the quantum basis of mind before we will know the answer to that question), then it seems more consistent with emerging principles for such fields to be linked to mental states, and not to specific molecules. If that were the case, then every person who had ever lived, died, or had a dream at night would have helped to form the ketamine experience, and amongst drugs it would be the largest, most complex and most elaborate "building" of them all as it represents a state that all persons go through in the processes of life, death, and dreaming. This is in contrast to the "psychedelic" state produced by drugs such as DMT and psilocybin, important aspects of which (especially visual effects) few people recognize as being part of the normal spectrum of human mental states. A common statement made by persons given ketamine is "I felt like I'd come home,"[565] (although persons who take LSD, DMT, and similar drugs also have this feeling at times).





Professor Ron Siegel also published a report in 1978, a small study of non-medical users. This relatively hardheaded rationalist concluded that there was an equal division between positive and negative effects.[542] Psychiatry professor John Olney, commenting on ketamine's site of action, noted that the system presented "benevolent and malevolent paradoxes."[450] The black and white split seemed to extend through every level of the pagoda. It is a curious coincidence that in 1998, the amber "AB Ketamine-500" vial (50 mg/ml), made by the conservative German company Astrapin, appeared to have a small but definite yin-yang symbol printed onto its lower margin, just after the "Biotest-Pharma GmbH" inscription.

Moore, who saw herself as the life-giving Goddess, died in the Jungian symbol for chaos and shadow: the dark forest beneath the icy moon. John Lilly, a veteran of experimental death and 5 hospitals who railed against confinement in his bony cage, lives on surrounded by sun and sea. He explains that the reason ECCO keeps him around is so that he can work on being human and laughing more. Through laughter the tension between extreme distinctions is resolved. This is

why Shiva, creator and destroyer of worlds in Hindu mythology, is always smiling.



Chapter 3

## Dreams and Realities

*I'm on a guided tour through the subatomic factory, which continuously generates the Universe…countless other universes are rolling off the assembly line…*[563]

**Rameses Sputz**
"A report on Vitamin K," *High Times* (1989)

*Nightmares, delirium and hallucinations…*[109]

**J. Descotes** & **J.-C. Evereux**
in *Meyler's Side Effects of Drugs* (1989)

This chapter considers some of the effects people are seeking when they take ketamine on purpose. The "bad trips" and nightmares are discussed in Chapter 8 rather than here. The terms used to describe the journey reflect the beliefs of the describer, and two fundamental belief systems emerge. One group uses terms such as psychosis, hallucinations, and delirium—expressions that imply disorder and malfunction. The other group speaks of revelations, visions, mystical insights, spiritual trips, and alternative realities. These are two different world views, and arguing over which is "right'" may have about the same value and produce similar results, as an argument over which is the one true religion. There is a case for going at least as far as a first basic step of a research procedure: carefully recording what users actually say, as we may be approaching the limits of what is currently understandable. This chapter is thus rich on quotes from persons who have taken ketamine and relatively sparing with interpretations, although these will be attempted in subsequent chapters.

### Set and Setting

In addition to dose and how the drug is taken, "set" and "setting" have an influence on the experience. "Set" refers to the personality,

past experiences, mood, motivations, intelligence, imagination, attitudes, current life-activities, and the expectations of the person. What people hear and read about the drug will influence their expectations. "Setting" refers to the conditions of use, including the physical, social, and emotional environment and the other people present.[350] Empathy with the person giving the drug is a very important factor, even with an anesthetic.[93, 551]

A pleasant set and setting are more likely to have a positive outcome, while an unpleasant set and setting are more likely to have a negative outcome. However, experiences at higher doses are largely internal events. They are less influenced by setting than LSD trips, which can increase engagement with the external world as the taker becomes fascinated by patterns on the wallpaper and the folds in their clothes. With ketamine, the setting will be important at low doses. Music can be an important part of the setting. It may not be heard at all during some parts of the session while at other times it can be very loud. Music has been used by anesthetists to produce a much more favorable experience in formal trials.[343]

The way in which the drug is taken may also be important. Those who "snort a bump of K," or who swallow a "dodgy E" and spend several hours trying to see their friends rather than God, do not often report such dramatic effects as many of those listed below. Some believe that they need "a line like a mountain range to see God on K." Nevertheless, taking powder through the nose can produce anesthetic levels in the blood,[375] and experiences perceived as having a spiritual nature do sometimes result:

> I used pure ketamine in the NY club scene (nasal administration)… "beyond words" experiences, deep thoughts of family, in touch with God, another dimension of "reality." I'm not sure what is real anymore and what is illusion. But I think that experimenting with K has changed my whole outlook on life, death(?), and God. I miss the deepness and extreme spirituality of the experience. At times during the trip, I reflected on my entire life, remarkably lucid visions of my birth, and the love for my family, the disappointing periods of my past…I am happy to finally know that there is a God.
>
> **K.U.**





At 10–25% of an anesthetic dose, ketamine's effects begin about 30 seconds after an i.v. injection, 2–4 minutes after an i.m. injection and 10–20 minutes after an oral dose on an empty stomach. The length of the experience varies from 10 minutes (i.v.) to an hour (i.m.) to 4 hours (oral). In the average case, a 100 mg psychedelic dose taken i.m. will produce an hour-long experience with full normality returning within 3 hours. Experiences can be very much shorter than this in persons with a high tolerance. A standard club "bump" for snorting is about 200 mg (assuming it is pure and not cut with something else), psychedelic doses for i.m. use are between 75–150 mg, while oral doses are usually 350–500 mg. The pills produced by persons selling "fake ecstasy" are usually much less than this and often also contain ephedrine, which is why their consumers often end up staggering around, falling over, and not having an experience generally considered at all pleasant or psychedelic. Intravenous infusion in research labs has produced a very high correlation between blood levels and psychedelic effects.[43]

Ketamine has also been taken by rectal injection (using a lubricated syringe with no needle) because the drug has an awful taste and snorting powder irritates the nose. According to the National Institute of Drug Abuse (NIDA), ketamine powder is also now rolled with tobacco and smoked,[437] apparently to overcome the new "drug war" vigilance in some New York clubs. The NIDA "club drugs" web site (www.clubdrugs.org) provides links to updates in alleged United States trends in ketamine use.

"I would certainly wonder why anyone would wish to experiment with ketamine?" This question was posed by someone who had a bad experience when given Ketalar® as an anesthetic in a hospital. Some of

the answers are as follows:

### Recovery of Forgotten Memories

> It was a wonderful awakening to information. As if all the normal subentities that block your mind had been cast aside and I was able to discover the hidden meanings behind every door that was normally closed…I also remembered events as a child; things I would never normally remember. I never felt as if I was not myself—my memory and intelligence seemed dramatically enhanced. There was no feeling of depression or anything else of the sort afterwards, only a feeling of calmness and inner peace…
>
> **K.U.**

### High Speed Travel through the Plumbing of the Universe

> We stretched out on the futon couch after drinking the ket. (350–400 mg oral)…we started our roller coaster out. There were two tie-dye tapestries. One of them had a spiral and I found myself getting sucked into the vortex…I can't feel my body anymore except this overriding general fuzziness. The lines on the ceiling become a tunnel and I am flying down it faster than sound approaching the speed of light. Oh no, the tunnel takes a big dive downwards! I am facing straight down this big tunnel and I am falling. WOW! Then the room does a somersault and I with it. And this ride is really moving. I'm scared like hell because this is a thrill-ride and the car is the dimensions of existence now. The music changes and our bodies morph with it. I am outside my room looking down at us. There is so much going on outside of us. Other people, other rules, other things that we are not allowed to see in the day to day. More knowledge. I am a universal consciousness. This hand is part of the wood here and the music…My astral body





> 3D gets sucked into a 2D plane. A candle in the room brightens and the whole Ket room changes; it's redder now. I see the tapestry way in the distance…I can make anything out of anything around me the way I want it. I transport myself to Japan…
>
> **K.U.**

Sensations of apparent movement can also take place in flotation tanks. These have been described as being like constantly going over a waterfall or rotating on an axis.[364]

### Morphing Heads

> Never having taken ketamine before, I decided to inject 100 mg. Unwisely, however, I also decided to assuage my trepidation at having to stick needles in myself by going for a couple of beers first. I unexpectedly met an old friend while I was in the pub and ended up drinking about 8 pints of lager. Within just a few hours of staggering back to my flat, I had injected all 200 mg and was no longer human. My body image was distorted beyond recognition—fantastically elongated pipe-cleaner legs and arms, spindly E.T.-like fingers, and morphing alien-insect head in the mirror…
>
> **K.U.**

### The Light Within

> There is a lot of bright light, especially when you close your eyes. You're not just seeing it—it's actually there inside you, behind the eyes. These are not patterns on the eyelids or the vague visions in the head seen on marijuana. This is REAL light. I'm not talking about the God-light either, the one at the end of the tunnel and all that white light of the void stuff. I've

seen that Golden Glow on ketamine—that's something else again. This light in the body doesn't have that sense of meaning. It's more as if neon signs and lasers are actually inside you. It can be difficult when you're trying to get to sleep afterwards. You can turn off the room lights but not the headlights!

**K.U.**

### Floating, Flying and Out-of-Body Experiences

Experience of the separation of consciousness from the body. This includes near-death experiences and reports of "astral travel." Numerous examples occur throughout this book.

### Personal and Creative Problem Solving

I would take measured doses of 80 and later 120 mg in a plastic minibag with me to parties and a straw which I inserted into the bottom of the bag to dose myself…I would pace doses at least an hour apart by affixing an hour-burning incense stick to the back of my wheelchair and checking it so as not to accidentally overlap doses. And it certainly helped to be sitting down, surrounded by mad dancers and throbbing music. I would also have many great revelations on the dance floor that would often relate to either a graphic design project, or a book I was writing, and I took to carrying a micro-cassette recorder to record these ideas for later development—with great success…

**K.U.**

### Visions

These are sometimes beautiful and mythic, but can also be very ugly, including (for example) dirty industrial scenes. The visions often





take their form from whatever was noticed in the external room on the way out, or the thoughts in the mind before the session began. When a person is isolated from the external world, the last images and thoughts that remain can sometimes program the experience, or at least the opening scene.[363] Hence syringe visions can occur, rather than the Pearly Gates, as syringes are sometimes amongst the last things people see on "the way out:"

Now the prickly branches were thorns thrust into the breast of the sky—thorns piercing the heart of heaven as though each needle-tipped projectile were trying to penetrate the bloodstream of creation…

…it was impressed upon me that the entire universe is like a syringe, as the breath of spirit is injected into the body of matter…[423]

**Marcia Moore**
*Journeys into the Bright World* (1978)

First visual image is two crossed syringes reminiscent of the skull and crossbones icon used to identify poisons. The vision is disturbing. I'm scared…[563]

**Rameses Sputz**
*High Times* (1989)

### The Opening Notes

(50 mg, i.m.) It started with a slight giddiness and a noise like the chirping of crickets. The cricket chorus rapidly swelled to a smooth purring roar…The sensation was reminiscent of the times I had inhaled nitrous oxide at the dentist's office. But that had been like standing at a door. This time I was going in. It also felt like going home…This inner realm, full of sound, color and sensation was itself entirely formless. Here there

could be no distinctions between subject and object, this and that, I and thou.[423]

**Marcia Moore**
*Journeys into the Bright World* (1978)

### Eternity: the Time Announcement is Off

Ketamine can have a profound effect on the sense of time, which often slows dramatically before vanishing completely. Awareness may then appear to enter a state of eternity. Eons of evolutionary events can seem to take place before a sense of real time is regained.

### Apparent Insights into the Nature of Existence and the Self

Many people who never thought about spirituality or the meaning of life reported having experiences that one might read about only in spiritual texts or Eastern teachings…For many it is a profound insight that they can exist without their bodies as pure consciousness or pure spirit. Many of them said that as a result of their experience, they understood the Christian notion of the separation of the soul and the body, and that they now believe some part of them will continue to exist after death. There were several cases where people reported contact with God. They describe an ocean of brilliant white light, which is filled with love, bliss, and energy.[344]

**Igor Kungurtsev**, M.D.
describing ketamine psychedelic therapy (1991)

### Integration / Disintegration

…K can split you into several personalities—different selves in one room—without anything to unify all the subroutines into a single whole. You realize that the real miracle is that





there is EVER a unifying self. Neurosis and psychosis seem far more likely. Just how does the brain pull it all together into one ego?…I talked to my selves as a group. I would say: "O.K. guys, how do we feel about this?" Once I actually saw myself split up into 3 different people, not in my mind either. I mean that I actually saw one of me to the right, and one of me on the left…But K can let you reintegrate as well, into someone who is more coherent and together than before. You have to know when the therapy is complete and its time to leave.

**K.U.**

### Bonding and Love

Before I started to overdo it, K was good for my relationship. Then it became very bad. E [MDMA] never made me feel all that "in love." E can have a more challenging edge to it if you take it at home without that horrible house music banging in your head. On E, I was thinking, "Yeah, yeah, very pretty, but what about this which is wrong, what about that?" Speed was even more like that. I became a silent, cynical critic. But low dose K was pure emotion, no thinking. Just a warm golden sun of love for my partner into which I could dive like a pool. It seems to me that if you take K in the dark by yourself, it'll be cold. If you take 50 mg i.m. in a warm sunny bedroom with a friend you'll have a very different experience. Where you are and who you are with do count…People who think they're made of plastic and have turned into computers are telling us something about themselves as well as something about the drug…

**K.U.**

Emotional warmth appears to be more likely at low doses, if the

drug is taken by mouth, and if the set and setting are suggestive. The effects of a pill are often unpleasant at a club where movement is required, but lying quietly has produced other opinions on oral ketamine.

> (On 400 mg oral ketamine, taken at home by design, 1 hour post ingestion): I started to feel physically very warm. I could talk but it was much nicer to just kind of curl up and feel cozy. The next two to three hours were totally amazing. My thoughts were very clear and I could guide my trip in whatever direction I wanted. Most of the time I felt like a pure light that could flow like lava. It felt beautiful. I felt God-like. I would love myself; it was great. When I'd think of my friends, I'd feel very warm…unlike LSD/mushrooms, there was none of the physical "on edge" feelings—my body felt very warm/snug/relaxed, and the trip was less idea-based and more feeling-based, sort of like X [MDMA]. I went to sleep at 1:30. Woke up today at 10:00, and felt good. Psychologically, I'd say I felt great, I feel a lot of warmth towards everyone around me, and towards myself…
>
> **K.U.**

### Sex and Tantric Yoga

Ketamine tends to numb the body and higher doses are not compatible with sex. The drug is sometimes given to reduce unwanted erections during surgery, although it often fails to have the desired effect.[17] Nevertheless, some people who take low doses (and those with a tolerance) report a marked increase in the desire for orgasmic release after re-entry. This may be a neurochemical-rebound effect, or it may be related to the near-birth issues discussed in Chapter 4. Initially, the drug shuts off the manufacture of nitric oxide, a substance involved in producing erections. However, a subsequent rebound effect might increase the nitric oxide level, in a similar way to the erection pill Viagra® (sildenafil). This may explain reports of sustained erections following low-dose re-entry, and the drug's initial and continuing popularity in gay club culture. Reports of enhanced sexual pleasure in the post-ketamine state may be related to raised levels of hormones and a brain chemical called dopamine.





Removal of mental blockages could also encourage the flow of libido. Enhanced feelings of love may lead to sex, as may the experience described as "merging energy fields to become one," which is sometimes considered to be a form of Tantric yoga:

> The first few months I was doing K, I couldn't imagine having sex on it: numb, dizzy—I don't think so. Then I started to feel really sexual some time after taking lower doses. It took a really long time to have an orgasm but it was worth the wait. I remember having actual sex with this girl on a desktop after I had come down (not a hallucination). I found that in this phase my erection was actually very hard and lasted longer. The room seemed to fill with a kind of erotic sexual jelly. It was as if the room itself was having an orgasm and filled with clear come. There was a period when I kept taking K just for these sexual effects.
>
> **K.U.**

### High Indifference

Sometimes the emotional brain may seem to have been disconnected, resulting in a dispassionate indifference. There can be a marked lack of concern as to whether one lives or dies. However, the opposite effect is also possible, with persons who think that death is at hand having extreme panic attacks, and behaving as if they do care very much about what happens to them. The unemotional "Spock-the-Vulcan" perspective is only one face of the drug. There is now abundant evidence from brain scans in living humans that the higher brain (neocortex) is strongly stimulated while parts of the "emotional" brain

may be less active and partially disconnected, until the blood level starts to fall. This may explain the emotion-free state of high indifference with which higher psychedelic doses are linked.[607–8] This fits Moore's observation that the "higher realms were pure mentation" and it was not until she had "descended" that emotions returned.

The panic attacks seem to occur on the way "back from the void," which would be consistent with the fear centers being switched back on again:

> Yet no fear was occasioned by these grotesque hallucinations, presumably because the circuitry pertaining to fear was anesthetized. The witness simply witnessed. If there was any emotional part to the experience, it consisted of sheer bewilderment. "Bizarre," I kept exclaiming out loud. "Biz-arre!"
>
> **K.U.**

### "Becoming God"

> I was actually God. I distinctly felt the universe watching for my signal to see if it should cycle through itself once again, as it had an infinite number of times, or should it simply conclude. It felt so beyond unquestionably real, it was just as plain and crisp as it could be, not some hallucination…
>
> **K.U.**

### Contact with the "Higher Self"

The "higher self" is a vaguely-defined term that has been applied to everything from the sense of a conscience and Freud's superego (the part of the psyche that makes distinctions between right and wrong) to an aspect of ourselves that is considered—by those who believe in such possibilities—to be eternal, existing beyond space and time (also known as the "quantum self," as subatomic particles behave as if space and time did not exist). The term is sometimes used to mean the soul, or an essential archetype or blueprint of the person that is not affected





by the birth and death of the ego. The New Age (alternative spirituality) perspective is that the higher self is a positive force that has the best interests of the person at heart, like an angel looking over your shoulder. It is seen as a source of wise advice. Others maintain that the higher self exists beyond human concepts of good and evil, which are simply a matter of local custom. Ketamine is sometimes said to bring the higher self into the spotlight of the mind so that the person becomes more aware of this aspect of their being. The will of this "aspect of their being" may be that the person stops taking ketamine.

### Volume Control—Up and Down

It is too simple to say that ketamine blocks incoming sensation. While it may be impossible to hear external noise at some points, at others sounds may be much louder, with selection of certain frequencies. This is more likely during "re-entry:"

> On a previous trip I had tried listening to music, with unsatisfactory results. Apparently the parts of the brain that handle auditory sensory input do not function well under ketamine. Ketamine is an "interior" trip—contact with the outside world is dulled but interior sources are opened.
>
> **K.U.**

> The music is deafening, your whole body obeys it. It is as if your body is pulsating in unison with the music. And you are flying in pitch-darkness…You are always moving. You are a ball among other balls rolling along the corridor…Always dead ends, turns, flights and drops; turning into a cube with smoothed edges…you become a brilliant white point flying in space. Then you burst into thousands of splashes, and again turns, nooks, flights and drops, but always in a rush and always ahead, ahead…[332]
>
> **Patient P.F.** (*e.g.* from the work of **Evgeny Krupitsky**)

### Apparently Becoming Other Living and Non-living Things

I felt my consciousness grow to encompass the sum of the mental activity of the area around me. I distinctly recall experiencing the racial consciousness of most of Manhattan and the nearby boroughs. Later I realized that I was encompassing an area including everything from Boston to Washington, including a substantial chunk of the Atlantic Ocean. Very dark out there…deep, too.

**K.U.**

### "K-Talk"

Strange new words form with meanings that sometimes cannot be conveyed, such as "zoogle" and "plasmaphosis." These are called neologisms. There may be repetition of the same word at great length, as if it had profound meaning and transcendent significance. Repetition of rhymes and near rhymes, which are often meaningless in our everyday reality, is also common. These may appear to contain within them the "Secret of the Universe," *e.g.* "Every angel is an angle" or "Every sun is a son."

### Lucid Dreaming and the Rising Kundalini ("Snake Energy")

A lucid dream is one in which the person is aware that they are dreaming. The awake, self-regarding ego is present, and may thus be able to influence the dream contents and direction. This can lead to a "choose your own reality" feeling of being in control. This is more likely to happen if there are factors favoring persistence of the awake ego. During the ketamine use, such anchors may include music, lighting, lower doses, pre-dosing with stimulants, a pre-existing determination to have a lucid experience, and to hold a particular image in the mind. However, some people feel that they have no control over what happens at all, and that the drug "has its own agenda." Once strapped into the rocket ship, they feel as if a pre-programmed autopilot takes over that they are powerless to change. The perception of





being controlled by larger forces strengthens as dose levels rise.

> …P– had a change of plans and had to take the artwork down, so we were left with an empty gallery when it came time to dose…[We] snorted…the K came up quickly, but it came without the storm of impressions and associations which had marked past experiments. The feeling was one of ultimate clarity and lucidity…This served to remind me of the power of willed thought with K…It seemed as if we could go in any direction at a thought, that as soon as something was willed, it would be done…I began…to imagine vivid artwork on the white walls. This was quite successful, and very beautiful. I managed to cover the walls entirely with a brightly-colored jungle of hallucinatory flowers…quite suddenly, I felt a surge of energy rising in my spine which I experienced as large white flowers blooming thickly up the middle pillar…we became aware of very strong currents of energy passing among us. All three of us held hands together and it was as if, a) there was a very strong throbbing current passing through them, and b) as if all three hands had melted together…As if on cue, we simultaneously released hands and repeated the same thing with our hands about six inches apart. The pulsating current was, if anything, even stronger and quite tangible to me in the air between our hands and through my body…the predominant impressions were of lucidity, peace, beauty, and will.[138]
>
> **Philip Farber**
> *Psychedelics and the Art of Ritual* (1994)

Kundalini is a term from Eastern religious philosophy. It means the "serpent power," and represents the feminine creative energy of the universe in Indian spiritual teachings. This energy is said to exist both in the external world and within the body, lying dormant at the base of the spine like a coiled serpent. When activated, the energy is said to

rise up the spine, switching on centers in the body called chakras. This process has been described as having positive effects on healing processes, the personality, and the general development of the person. The term "prana" refers to a less specific "primary energy." Energy movements in the body that do not involve the "coiled serpent" are referred to as "pranic."[294]

### Reports of Telepathy, Magic, and Synchronicity

There have been reports of apparent telepathy, seeing the future, a sharp rise in coincidences, apparent contact with the dead, and other events described as psychic, transpersonal, and magical by those who experience them. Much has been written on the use of plant-based drugs for ritual and magical purposes in pre-industrial societies, but little is available on the use of drugs for such purposes in our own society. Ketamine is seen as a very "modern" drug and it is interesting that it has been used in this way by "modern magicians" in New York City:

> I create ceremonies based on occultist Aleister Crowley. (Crowley's *Magick in Theory and Practice*). I also incorporate elements derived from hypnotherapy, theater arts, yoga, and other disciplines…given the laboratory of my own psyche, I have attempted to adhere to "the method of science, the aim of religion." Several years ago I was fortunate to be able to experiment, for a time, with ketamine. I eventually settled on a form which involved banishing, consecrating and performing a full invocation. I would then take a dose of K and don a pair of headphones which would play me a hypnotic instruction beginning with basic trance induction…Out of body experience was another common result of these rituals. No longer was I in my upstate New York apartment; I was in Egypt, inside a pyramid. I was lying inside an open sarcophagus. The inside of the chamber was brightly lit, a bluish-white light





> adhering to everything. And also radiating very strongly from me. I felt that this light, which moved through me, and radiated from me, connected me with everything else through space and time, especially a moment in space-time when a man in upstate New York was lying within a magick circle somewhere in the twentieth century. Ancient Egypt and many other "times" were all there at the same moment.[139]
>
> **Philip Farber**
> *FUTURERITUAL: Magick For The 21st Century* (1995)

### Kyberspace and Information Networks

Some of the most typical effects can resemble virtual reality devices, a journey through information networks ("kyberspace") or entering the web cyberspace. William Gibson mentioned a brick of ketamine in his 1984 cyberpunk science fiction book *Neuromancer.* Gibson's descriptions of cyberspace resemble a form of ketamine experience: access to vast nets of shimmering information banks, some of which are protected by Black Ice.[170] The Disney film *Tron* is also sometimes mentioned in this respect. (*Contact*, *Existenz*, *The Matrix*, *Solaris,* and going through "the star gate" in *2001: A Space Odyssey,* are other films or scenes from films, mentioned by ketamine users as conveying certain features of the possible altered states of being.)

> 100 mg injected. Soft onset after 2 minutes. Colors fade, light fades, no sound, no body-feeling. From the outside I now appear unconscious. After relaxation, a feeling of falling down, then a fast ride down a helical shaped passage…A feeling of fear, tension, expectancy. Then I entered a room without borders, filled with "simulations." I realized that my life and everybody else's was playing in these simulations, but now I was seeing this from outside. To "see" here meant an unlimited, uncentered, holographic view. This Realm wasn't made of matter, but of information…I felt that I was returning to

our Sphere, approximately 30 minutes after the start…I floated back with a peaceful and content feeling. I felt that I had experienced something good, something special. I was slowly entering my body, like putting on a garment: legs first, then arms, chest, head. At the same time, my sight and hearing returned as I was shifting my attention to these senses. Your memory of it fades quickly, just as with a dream. Another 30 minutes later I felt sober, still relaxed and confident. This experience felt to me as real as anything I know from this world.

**K.U.**

…I'm in hyperspace, simultaneously connected to all things…I am not locked into the current moment. I experience backwards and forwards in time as well, with the current moment being the center of intensity…I feel like a single atom or point of consciousness adrift in a swirling vortex of energies, like a single cell within a being of galactic proportions. This feeling may shift and I then become the center point through which all these energies pass. The experience is of titanic proportions in the merging of energy, intent, and awareness…I do not experience any fear…I come to an apex. At this point I have felt that my will determines whether or not I exist, and whether or not the universe exists. And I could toggle between existence and non-existence many times within a second… Upon returning to the body, visuals will continue for a while with eyes opened…I tend to feel light (anti-gravity), slightly dizzy, have poor motor coordination, and a bit nauseous if I move around…I find it best to just relax, lay in bed, listen to music…Memory of the experience is even difficult…some part of the mind protectively closes off access to the dimensions experienced on Ketamine.[591]

**D.M. Turner**

*The Essential Psychedelic Guide* (1994)





In January 1997, D.M. Turner—the author of the above quotes—died in a bathtub in San Francisco, aged 34, with a bottle of ketamine next to the bath. The cause of death was listed as "drowning." However, it is not easy to slip below the waterline in the average bath. His body was found in a kneeling position, head down, facing the taps. He may have collapsed or (less likely) slipped into the bath while still affected by the drug, ending up with his head below water. Other people with ketamine problems have reported similar events, being so eager for their hit that they have injected standing up before actually getting into a bath, while waiting for it to fill, and then collapsing and coming round bruised and possibly bleeding—but fortunately still alive. Rather than being another tragic accident, some people imagined that Turner's will had indeed determined not to exist in a similar way to that which he had mentioned in his book. There were those who speculated that he had been attracted to a new reality, leading him away forever from his life on Earth. However, an accidental death during a solitary New Year's Eve celebration seems to be the most likely explanation. Turner's books are no longer in print and hence detailed extracts appear here so that, as with Moore, his observations are not lost to us.

> Several times I've come to a point where it felt like my heartbeat was voluntary, as if I was actually inside the mechanism that caused its firing, and also I felt as though I was at the boundary between life and death—that, if I chose, I could just walk right on over, no problem. Each time, I stopped, withdrew, and the trip began to come down after that. Not quite ready for that responsibility. I'm guessing that's what happened to D.M. Turner…
>
> **K.U.**

## Becoming Mythological Beings and Archetypes

…I was Isis herself, the virgin mother-goddess brooding

lovingly over this world that I had created and was enfolding with arms like wings. I was making the sun shine, the crops flourish and the waters flow…the feeling was that associated with one of those full-bosomed mythic earth-mothers who simultaneously exemplify the qualities of fertility and purity.[423]

**Marcia Moore**
*Journeys into the Bright World* (1978)

### Becoming a Point of Energy—Quantum Consciousness

(100 mg i.m.) My first alert that it was taking effect came as a rising ringing in the ears…Are you familiar with the film editing technique of fading out from the edge of the screen inwards until the image is reduced to a tiny dot in the center? This is essentially what happened to my consciousness over a period of a few minutes. First my peripheral perceptions blurred and contracted, then my primary senses, my connection to my body, and finally my sense of "me." There was absolutely nothing scary or uncomfortable about this sequence of events…At the end of this process I was nothing but a single, tiny dense point of consciousness in the midst of a vast, multidimensional, seemingly empty space. Then that vanished, and with it went the last vestige of observer consciousness and individual identity…I had traveled back to the primordial, undifferentiated oneness of being that preceded the big bang and the creation of the manifest universe. There was nothing to see or interact with; I had penetrated a level prior to any sort of subject/object distinctions. The universe was all one thing, and I was it!

After about thirty minutes on the clock (although subjectively the concept of earth-side time was meaningless to me), I somehow regained a slender thread of individuality…This





re-entry process felt good, like being born anew…For the next hour and a half I was woozy, shaky on my limbs, thick-headed, and somewhat nauseous if I moved around too much …[593]

**Trey Turner**
"Ketamine: First Impressions," *Trey's Travelogues* (1996)

### The Loneliness of the Long-Distance Traveler

(After coming down from the drug) a deep desire to reconnect with the field of folk then swept over me. I simply had to get out of my flat and be among other people again. I needed to feel that I was part of the human race once again; to feel the warmth of human community, and, most importantly of all, to get a beer before closing time.

**K.U.**

### Conclusions

It is a challenge to describe in words what lies beyond the doors of dissociation. Describing altered states of being can stretch language to its limits. Nevertheless, these travelers' tales do describe the more sought-after facets of this drug. Those who remember their dreams may find that some of the "ketamine realities" are not so far from home after all. The inadequacy of terms such as "bad trip anesthetic," "hallucinogen" and "dissociative agent" is clearly demonstrated by the above accounts. The profound out-of-body effects are the main theme of the next two chapters.

Chapter 4

# Ketamine, Near-Death, and Near-Birth Experiences

*Oh, that I cou'd by some Chymic Art To Sperm convert my Vitals and my Heart, That at one Thrust I might my Soul translate, And in the Womb myself regenerate; There Steep'd in Lust, nine Months I would remain Then boldly fuck my passage out again.*[301]

**John Wilmot**, Earl of Rochester
"The Wish" (1678)

The near-death experience (NDE) is an altered state of being that can be reached in various ways, including through ketamine. In the past, I have published several articles about ketamine and the NDE that concentrated on events in the brain itself.[241–3, 247–9] In this book I will also consider far more speculative suggestions that the brain can act as a transceiver, converting energy fields "beyond the brain" into features of the mind, in a manner similar to the way a television converts waves in the air into sound and vision.

To some scientists and others, advances in quantum physics suggest that certain drugs, and the conditions that produce near-death experiences, may "retune" the brain to provide access to fields and "broadcasts" that are usually inaccessible. They propose that this retuning may open doors to realms that are always there, rather than actually producing those realms, just as the broadcast of one TV channel continues when we change channels. Some users believe that this idea is true, while others see it as a dangerous delusion leading the unwary into "the repeated use trap."

This chapter mainly describes events in "the television" itself, while the hypothetical matter of fields "beyond the brain" is the main topic of the next chapter.





## The Light and Dark Within

All the features of a classical NDE can be reproduced in some people when ketamine is given at the right dose in the right set and setting.[241–50, 247–9] Obviously the drug has many other effects, just as persons who have a heart attack may report altered states of being with a wide range of contents.[502]

There are no agreed criteria defining the NDE. Different researchers have their own lists of requirements, so they are sometimes talking about different states of being. Those who believe that near-death experiences are always joy-filled, calm, beautiful journeys simply label terrifying accounts as something else, such as a nightmare.[459] Another source of bias is the reluctance of those who had bad experiences to share them. History is generally written by those who saw the Light rather than the Dark. Neuro-psychiatrist Peter Fenwick, co-author of the 1995 book *The Truth in the Light* noted that persons who had negative or neutral experiences were much less likely to want to communicate them than those who had positive experiences.[147]

It has been argued that an important difference between near-death experiences and ketamine-induced experiences is that the latter can be unpleasant and there may be no desire to repeat them.[575] However, some people have found ketamine experiences to be euphoric and blissful, and have wanted to take the drug every day, while some near-death experiences can be dark, frightening, and far from tranquil. Raymond A. Moody, Jr., M.D., author of the classic 1975 work *Life After Life*,[422] noted that near-death experiences linked with suicide attempts were always horrible; one woman's account in the book stated: "If you leave here a tormented soul you will be a tormented soul over there too." Moody describes the case of a person who went to an "awful" limbo place where they thought they would have to stay for a very long time. Marianne Faithfull had several frightening experiences linked with her suicide attempts. She had just parted with Mick Jagger and was dealing with the death of their friend (possibly by murder) Brian Jones. She described dark and sinister events.[132] Some ketamine experiences may share common ground with certain suicide attempts

because they involve a self-induced form of ego-death and—where repeated and frequent use is involved—may represent an attempt to escape from normal life. Carol Zaleski has commented at some length on the sanitizing of the NDE for the modern feel-good market. In her book *Otherworld Journeys*, she noted that accounts of near-death experiences from Medieval times were filled with "harsh judgment scenes, purgatorial torments and infernal terrors," which have disappeared from "today's upbeat near-death literature." She quipped that the modern being of light "communicates, but never excommunicates."[630]

Even if we accept that near-death experiences occur during "soul transition" (as is claimed by some people with a spiritual orientation), we would still expect some darkness to accompany the light, one being required to define the other. Many of the ancient myths and religious ideas tell of both blissful and frightening journeys. Part of the Tibetan *Book of the Dead* concerns fearful journeys, the signs of Third Bardo existence including panic, torture, and persecution. The form the demons take depends on the person's own cultural origins.[353] Psychiatrist Stanislav Grof's model includes great fear, anxiety, panic, and paranoia, in addition to many beautiful, ecstatic and euphoric states.[198] NDE accounts can describe hell, purgatory, heaven, and various stages in between, as can reports of ketamine experiences. There can be no light without darkness, and it is neither credible nor accurate to describe all near-death experiences as filled with peace and quiet. It is also wrong to view all ketamine experiences as unpleasant—a common counter-bias. The Parke-Davis data sheet refers to vivid dreams that may be pleasant or unpleasant.[466]

> I think many New Age efforts at spirituality really fail because they're so taken by the light, and so eager to hold up light and warmth in a world that can be cold and dark, that they don't honor enough the darkness, the sinking, the suffering, and the Shadow.[537]
>
> **Mathew Fox**, an ex-Dominican priest
> *Natural Grace—Dialogues on Science and Spirituality* (1996)





### The Main Events of the NDE

Important features include a sense that what is experienced is real and that one is actually dead, and that what is happening is inexpressible in words. A sense of timelessness and eternity is common. There are often feelings of peace, joy, and euphoria although some cases have been frightening and deeply unpleasant. As well as heaven, it is also possible to emerge into nightmare spaces where the light at the end of the tunnel is an oncoming train, or a lit match in a coffin.

The initial events may sometimes happen at high speed. In a typical case reported by Moody,[422] a person went through a dark, black vacuum at super speed, as if he was on a roller coaster. Moody noted that he had heard others describe this space as a cave, a well, a trough, an enclosure, a tunnel, a funnel, a vacuum, a void, a sewer, a valley, and a cylinder. Almost all of these expressions have also been used to describe the early phases of a ketamine journey.

In both a NDE and a ketamine experience, there may an inability to feel pain, clarity of thought, apparent separation from the body (an out-of-body trip), and/or visions of landscapes, angels, beings of light, people including partners, parents, teachers and friends (who may be alive at the time), and religious or mythical figures.[24, 147, 163, 190] There may seem to be interaction with these figures, who are sometimes (although not always) perceived as helpful. Some people describe meeting more mundane beings such as Elvis (apologies to anyone who thinks that Elvis is God) or characters from *Star Trek*. Euphoria is common. The person may divide the experience into distinct sequences, including perception of a border between different realms at which they turn back towards life, or suddenly enter a new phase. There is often no choice about the direction of the change, which appears to be dictated by larger forces. In both near-death experiences and ketamine experiences, there may be a marked reluctance to return. In his book *Addict*, Stephen Smith describes being forced to return as being "double-crossed by God."[558] In Christian cultures the person may be told that it is not yet their time to go, while in India they may be told that there was a clerical error.[429] The manner in which ketamine produces fast, distinct

phase-shifts tends to distinguish the drug from the classical psychedelic drugs. These usually produce more gradual transitions, rather than the perception that a switch has suddenly clicked. Ketamine experiences can involve very abrupt click-click-click phase-shifts, like walking down a set of psychic stairs—and the return to normality can also be sudden in some cases.

Near-death experiences may involve reports of hearing a doctor pronounce the death and other words said by spectators, of hovering above the scene, or of having a more extensive out-of-body experience.[422, 428–30] Ketamine journeys typically involve "hovering" and "out-of-body trips." Fortunately, however, users do not usually hear doctors pronounce them dead, although psychiatrist Rick Strassman describes people given i.v. DMT who hallucinated this.[575–7]

Returning to the NDE: on the personal biographical level, old memories may emerge and are sometimes organized into a life review. "Lessons in love" are common—the message being that love is at the core of everything. Transcendent mystical states are common. Awareness can appear to enter transpersonal realms beyond the confines of time, space and the individual's own life experience. Hearing noises during the initial part of the NDE has been described, including ringing in the ears, buzzing, chirping and whistling noises.[497–8, 512]

Kenneth Ring, author of *Life at Death: A Scientific Investigation of the Near-Death Experience*,[497] classified the NDE on a 5-stage continuum: feelings of peace; detachment from the body; entering a transitional world of darkness (rapid movement through a long dark tunnel: "the tunnel trip"); emerging into bright light; and "entering the light." In Ring's studies, only 10% attained the last stage. Claims that near-death experiences are always identical, regardless of the set and setting, are contradicted by the variety actually found in published reports. They differ between people and cultures. For example, instead of a tunnel and angels, East Indians may describe the River Ganges and a particular guru.[163] A child having a NDE may "see" his or her still-living friends and teachers, or Nintendo and comic book characters, rather than God.[428–30] Near-death experiences contain as





much variation and as much similarity as are found in ketamine experiences, in the same set and setting. Claims that NDE reports are all very similar have been said to prove that souls are traveling to the same place. Not only are these reports *not* so similar, but even if souls did travel to the same place (presuming that souls exist at all), individual factors always influence what is seen—even when we are wide awake, watching the same channel. Modern quantum physics suggests an infinite number of other realities, rather than the narrow range provided by some religions.

Near-death experiences may be therapeutic. After-effects can include an enhanced joy in living, reduced fear of death, increased concern for others, reduced levels of anxiety and neurosis, reduced addiction, improved health and a resolution of various symptoms.[190, 497, 504] Positive changes can also follow ketamine experiences, especially if these occur within a therapeutic alliance, in an appropriate set and setting. This is sometimes called "death-rebirth psychotherapy."[332, 344] Like drugs, however, near-death experiences can also be toxic:

> I had a near-death experience before going into surgery…The appendix had burst. I did have an out-of-body experience, felt contact with a bright light and then a transparent figure telling me that it was not my time and I was to go back. After surgery I did not think much about this experience. However, a month after the NDE—it was later told to me that it was a NDE—I become chronically depressed and the intensity of the depressions increased to a point where I became suicidal. I kept getting flashbacks of childhood neglect and abuse—I even recalled an incident when I was six weeks old. I finally went into psychotherapy with a psychiatrist. After six years I am finally recovered. My experience is—and many others agree with me—that a lot of shit suddenly emerged from the back rooms of the mind and this had to be talked about in years of therapy. I have met many people who entered depressive states after their NDE and this does not fit a lot of literature, which

has created the impression that once an individual has had a NDE, life is suddenly heavenly. The hypothesis that once an individual has been "hit by the light" a sudden and dramatic transformation of the personality takes place is just not true.

**K.U.**

### Ketamine-induced Near-death Experiences

Ketamine can reproduce all features of the NDE,[241–50] including buzzing/ringing/whistling sounds at the beginning, travel through a dark tunnel into light at high speed,[247–9, 502] the conviction that one is dead,[565] apparent telepathic communion with God,[171] intense visions,[247–9, 344] life reviews, out-of-body experiences,[198, 329, 490] and mystical states.[203] Prior to Moody's *Life After Life* popularized the term "near-death experience," an anesthetist noted:

> Ketamine allows some patients to reason that…the strange, unexpected intensity and unfamiliar dimension of their experience means they must have died.[75]
>
> **Barbara B. Collier**
> "Ketamine and the Conscious Mind," *Anesthesia* (1972)

The following year, an anesthetist was given 3 mg/kg i.v. as part of a lung research study:

> I had no warning. I heard a dull buzzing and then, within seconds, I was unconscious…my first memory is of colors…Patterns appeared and faded, always in focus, with distinct edges…I was a mind suspended in space…Am I dying or already dead? I was not afraid, I was more curious. "This is death. I am a soul, and I am going to wherever souls go…"[292]
>
> **Robert E. Johnstone**
> "A Ketamine Trip," *Anesthesiology* (1973)





> My K travels would start with a ringing in my ears. I would suddenly find myself going down tunnels at high speed. Fast! Sometimes it was tubes, the tubes behind the fabric of everything. Sometimes I would be on an underground railway, but I wasn't in a carriage. I seemed to be actually mounted on the rail itself. Then I would suddenly arrive…One time I came out into a golden Light. I rose into the Light and found myself having an unspoken interchange with the Light, which I believed to be God, about matters which seemed to be of central importance to my Life and who I was, although I couldn't remember what we actually discussed afterwards. I didn't believe in God, which made the experience even more startling. Afterwards, I walked around the house for hours saying "Mine eyes have seen the glory of the coming of the Lord," and I was only half joking. Many of my trips, and I have had many, are a forgettable haze but that one stands out with great clarity. About a year later I went to hell instead. I took the largest dose ever, 200 mg as a shot in the buttock, and curled up for the night. Once again I was going through a pipe system, but this time I came out into a small, dimly lit glowing red room, and was filled with terror. I had lost my body and had become something hanging on a peg. I thought that I would have to stay forever in that room. I was in HELL. I screamed, and screamed…it was my first experience of what ETERNITY really means. I almost became a Catholic the next morning. That experience seriously shook the basis of my disbelief. I thought that people were absolutely mad who wanted to carry on for eternity without their bodies. It made me fervently hope that the end really is the end…
>
> **K.U.**

The next account is an example of how near-death experiences and ketamine experiences can be identical, and shows the use of these states to self-treat an acute grief reaction and to prevent the development of

a post-traumatic stress disorder.[628] The person interviewed was a man who lost his partner in a fire, had a NDE while trying to rescue her, and had an identical NDE while taking ketamine for the first time a week later. After the fire he felt as if "all around, life is going on, and I'm, like, lost."

> I had a near-death experience about 6 days before the first time I took ketamine because my then partner died. She had a party at her flat and the flat caught fire. I got out of the flat and thought that she was out as well, but she'd been really drunk and she'd slipped and fallen and pushed the room door shut. I got out and shouted "Christ, she's not here!" and went back up. The flat was full of thick smoke. I thought, "Right, what you do is you get down on the floor and crawl along the corridor." But there was no air there. I crawled along and couldn't see anything. I could hear her and I was trying to push open this door but I couldn't. I was overcome with smoke, and clunk! The next thing it was like white light and then everything going very fast. All these sounds and things sounding far off and very close and far off, then whoosh! You're out of your body and there was all this light. All this sounds really crap, like one of those 1940s Old Testament films…It all happened so quickly. The next thing, it's very bright, you're out of your body, flying through the night and there's light, there's light. Er, well, it's pitch black and there's light—that's a better way of describing it. You go into the light and you just feel that everybody who has ever died is there. Not heavenly choirs as such, but there's certainly a lot of people around you and you get waves of concern. And the next thing was swoosh! And it was back to the everyday world very quickly. When I came back it was so abrupt, and I was fine really—I had a very narrow escape. Your first impression would be that you fly up in the air but that can't be. I'd have laughed at myself ten years ago for saying this kind of thing…So I had an out-





> of-body experience and then I got hauled out of the flat by ambulance guys who put an oxygen mask on my face. My partner was on a life-support machine from the Saturday until Monday, when they switched the machine off. I had acquired the K a week previously for the party, but didn't do it until a few days after she died. It was the first time I had taken K. I had the flat to myself. Everybody was out and I sat in the front room on a big comfy chair and just took this stuff. Within about 5 minutes I was out of my body. I was still numb after what had happened. It was like being outside of myself but still there. I could smell this perfume she used to wear. I could sense her all round me. It was like a way out and it was exactly like the out-of-body thing. It was very upsetting and it did shake my atheism, very much so. It made me aware of it not being the end when all this ends. I tried K again quite a number of times and the same thing happened every time. It was like this pure consciousness. I hadn't any shape. You could fly and you could actually travel although you are still in the same place. You are in the place where everybody is who has ever died. It's this big entity. It's not like an old guy with a beard. It's this sense of energy that everybody who has ever moved on is there together and it was like she was looking after me. Precisely the same thing happened with the K as happened in the (burning) flat, which to someone not expecting it would be pretty scary. It was exactly the same. I thought that I would never find anybody again and why hadn't I died as well, why hadn't I managed to get her out of that room? I thought it was my fault, I blamed myself for ages. I had a half-hearted idea of taking loads of pills and not waking up but what's the point in that? I've already been to that place once and they wouldn't have me then, so why would they have me the second time? Concerned friends and parents made me go into counseling and therapy and to see psychiatrists. I was put onto various things like Prozac, but I was finding that my

own "extra treatment" (the ketamine) was doing me a lot more good because K is very cathartic. I was doing it because it made me feel better, except the first time when it was quite a shock. It made me feel a lot less unhappy knowing that she was still there in one way or another. It would have taken a lot longer for me to recover if I hadn't taken K because it gets rid of a lot of hurt instantly…It's very reassuring in a way.

At the end of the first time I took it I was absolutely shattered and crying and very upset, but in another way I wasn't. Although you are not going to see that person again you get the impression that some-where along the line you are, and it's very heartening. If I hadn't taken K it would have been a much longer recovery process. I think it did do me a lot of good.

Every time it was almost exactly the same and I'm talking about 25 times of using K. Then it changed. It became less introspective. I'd been prescribed all these anti-depressants and tranquillizers but wasn't making use of the medication that I got a lot of the time because you don't if you're looking for jobs. It doesn't do to be monged out on tranquillizers. Once you get your head around the fact that it's becoming less, you think, "Well all right, okay, it's time to move on…" A lot of people would probably say that's because I was getting used to the effect of the drug. I made an attempt to get back to that first situation by taking a lot more K than I had done previously, but she was still as far away as she had been getting. It may well be a mental self-defense mechanism, sort of like "you don't need this anymore."

I used to find it a very enlightening experience, the fact that you go to the same place (during a ketamine experience as during the spontaneous NDE) and the same things happened. It must mean something. Before that I was a staunch atheist





but these days, not so staunch…I don't think it's one of those recreational things, but it certainly helps you work through stress and all those hassles and problems, and I'm just really pleased that I found it when I did because I think it was a Godsend actually.

*What had you heard about ketamine before you took it?*

I'd heard it was like a cross between LSD and ecstasy. People were saying, "Oh it's great." I took it to cheer myself up but it didn't work out in the way I expected it to. It took all sorts of mysterious twists and turns. It's certainly the most interesting thing I've done, probably because of the close proximity of the serious near-death thing and then getting the same thing but without the smoke and the flames, which straight-off was pretty scary: "Oh Jesus here I am again, there is nobody else here, am I going to die this time?" But as soon as I thought that, then I got this feeling all round me and thought, "Nah, this is all right, just go with it and see what happens." Because I think the worse thing would have been to have freaked out or panicked in any way, because there was nothing I could have done. I was sitting in the chair unable to move.

*How did you feel afterwards?*

After the first [ketamine experience] I was absolutely drained. I couldn't walk very well and I was really tired. Then it was the first sleep that I had since the fire. I was getting really drunk to sleep and of course you don't sleep properly, and taking various things to get me to sleep. I don't like doing that. After the K, I could sleep under my own steam for the first time in about 7 days. When I slept I dreamt about her very clearly. It was almost like taking K again in the dream.

*Do you think that encouraged you to take it again—that you did get that feeling that she was there?*

No. That was very upsetting because you got the idea the whole thing (the real death) had been a dream and that she was still there and it was all going to be fine but of course, it wasn't at all. I think once you get your head round it, that she is not coming back, then it's easier. It was like going to see a counselor or a psychiatrist for a very intense hour session but at least you don't have to talk. You just sit inside your head and work through it without having to tell a complete stranger everything. And at that point I didn't feel ready to talk about it to a psychiatrist. They were, "Press, press, you have to talk about it, you got to talk about this." I finally did start talking about it after I had taken K a few times and I felt a bit more comfortable talking about it. I didn't ever tell the shrink that I was taking K or what was going on. He asked, "Are you taking your anti-depressants?" "Oh yes, I'm taking my anti-depressants," and all that; but as I say again, K certainly made it easier to talk. It probably made the psychiatrist's job a lot easier. I'd still be going to therapy now otherwise—be some neurotic mess and just going round hassling him for more Prozac and more tranquillizers I don't really need.

*Have you heard of anybody else having a similar kind of experience?*

I have actually. I don't know the ins and outs of it but I know somebody who's used K quite a lot but they also had some kind of near-death experience separate to that. They've observed how alike the two things are rather than anything else.

*What about before you first tried it?*





No, I didn't know anything about it at all. All I've found out has actually come from that time. After the fire, that experience changed my whole outlook on life. It completely changed it. Taking K has changed it again. I regard K as a sort of a spiritual enhancer. It's nice once in a while to get linked into things you can't see. I do think that there is more to this than meets the eye. That has been one thing that has come out of it which I think is extremely healthy. I think also that if I hadn't used K I would probably have gone off-the-rails with drink and other stuff, but the fact was that I used K, and that was like a catharsis. In the short term it caused a lot of hurt and pain but in the long term it probably saved me a lot of grief. Without it I would probably be a mess and not working, probably in jail or hospital or something. Your actual hurt is not infinite and every time you take K there is this outpouring that is getting less and less. I'd like to think that it wasn't something in your brain that was doing it. I'm still not 100% convinced. I can handle that smell (the perfume of S.) now. Before, if someone was standing next to me in a shop queue who smelled like that I'd have to leave. The more I used the K, the more I was able to handle that kind of stuff. After a while it calmed right down.

*When you took it the first time, was any memorabilia of her in the room?*

Nothing. It was at night, I had the curtains drawn. I had a lamp on, just very dim in one corner. There wasn't any music, just me and my thoughts. I think that was the right way to do it because there weren't any distractions. As it turned out, there was no need for any of that anyway. It was all there, you know, everything was there.

*Would you recommend this to somebody who had someone close to them die?*

I wouldn't recommend to anybody that they do it the way I did it. I only took it because I was misled as to the properties. It wasn't what I expected and it could have all gone horribly wrong. But I would certainly say that it should be made possible for somebody like a psychiatrist to use for therapy because it only lasts for about 45 minutes to an hour. MDMA was used in America for wife and husband stuff. That's fine for that, but MDMA isn't right for this kind of thing and the other things like LSD are just too unpredictable and they last far too long and things can go wrong with them whereas with this you're up and down in 45 minutes. But you have to get used to it. Because you've got no idea how it just totally swamps you. That time I took it, it came in sort of lines of white powder and I took an eighth of a gram and snorted it and within half a minute, "Wow!" And it just keeps getting heavier and heavier down to 5 minutes when the full thing starts and it's, "Oh shit, you know, have I done the right thing?" And I thought, "Oh God! Maybe I shouldn't have taken this because this is not how it's meant to be." Not knowing that was how it was meant to be. When I initially took K I thought "Oh God, this isn't what I expected at all. Have I overdosed? Have I this or that?" But fortunately I was also thinking, "Well, I don't care, I really don't care what happens to me." But it all turned out for the best. It certainly took me out of myself. I felt so sorry for myself. I was absolutely wallowing in it. All my friends were saying, "For Christ sake pull yourself together; it's been like a month." At least I chose to do that rather than drink loads and loads of cheap whisky every day until I dropped dead. That was the other option. K did cut right to the heart of the matter…the one thing that cut right through all the crap. I think I'd have been going to





see a therapist for years for the same thing, and they are not cheap. Maybe it's something that could be used to solve emotional problems, in small amounts. It also made me more optimistic about things than I was beforehand…Do psychedelic experiences mean anything? I think that they do but I could be completely wrong. It could be just a trick of the brain chemistry. Even if it is, it did help me come through what I thought was the end of my life. I just thought, "That's it, everything is over," and then there was this entity with me saying, "Don't be so stupid." I'm not sure if it's all around us all the time and you just don't see it, or if it is genuinely somewhere else.[265] (With thanks to my colleagues P. Delgarno, S. Cahill, and D. Shewan.)

There are also accounts of ketamine journeys in which "the entity" becomes personified in the form of a religious figure such as Christ, a feature Moody believed to be reported only by those who had had "real" near-death experiences.[422] Those who deny that a NDE can be induced argue that people who have had a NDE often insist on the reality of the experience. However, those who have experienced ketamine are often just as insistent that they have not been dreaming or hallucinating, but that the events really happened.[509, 542–6] The fact that near-death experiences can be artificially induced does not imply that the spontaneously occurring NDE is "unreal" in some way. It has been suggested that both may involve a "retuning" of the brain to allow the experience of a different reality from the everyday world.

Some people who had a NDE during an emergency have described their resuscitation in detail.[512] Many surgical patients have also reported in detail what was said and done during the operation, even though they appeared to be unconscious during the operation itself.[525] In one report, 76% of persons given ketamine in an anesthetic study recalled specific conversations and about the same number knew the length of the operation.[93] The drug sometimes increases the response to sound in the higher brain,[96, 478] rather than blocking it out.

## EXPLANATIONS FOR THE KETAMINE-INDUCED NDE

### The Near-birth Experience

Some near-death experiences may be a re-activation of birth memories or an actual re-experiencing of parts of the process in symbolic form.[153, 198, 484, 626] Thus racing through tunnels towards the light may be a memory or symbolic re-experience of being born: a memory of "the near-birth experience." Psychedelic experiences have led some people to conclude that birth and death are seen as the same process at the unconscious level. Thus Sigmund Freud's "death instinct" may also involve a drive to return to the womb, to die by being "un-born." If being born is experienced as dying by the baby, then we are already in the "after-life," and the birth process will have formed our images of what progression to a "next life" is like.[193] This may partially explain tunnels, the light, and an apparent "telepathic communion" with God or God-like beings who may represent those persons present at the birth. This may also explain some resurrection and reincarnation ideas: the apparent "death which is birth" being followed by a new life.

The possible importance of birth in the human psyche has long been recognized. In 1910, Freud was amongst the first to appreciate that the birth trauma was a core imprint deep in the psyche:

> Birth is in fact the first of all dangers to life as well as the prototype of all the later ones we fear; and this experience has probably left its mark behind it on that expression of emotion we call anxiety…[159]
>
> **Sigmund Freud**
> "A special type of object choice made by men" (1910)

Freud did not pursue this further because he thought that the trauma was inaccessible to analysis. He was also very determined to discard all theories that did not support a sexual cause for neurosis. It was left to others such as Nandor Fodor and Otto Rank to explore the birth trauma further.[153, 484] D.W. Winnicott, a widely respected psychoanalyst, provided clinical evidence that the observing ego could be regressed back as far as pre-natal life.[626]





In the 1960s, research using LSD sometimes provided support for the importance of the birth trauma as a primary imprint in the mind.[193] Deeply involved in such explorations was psychiatrist Stanislav Grof, who began working with LSD in Prague in 1954, and moved to the United States in the late 1960s. His theories are based on over 5000 LSD sessions in his patients,[197] ketamine sessions,[198] and other methods for producing altered states of being such as Holotropic Breathwork™.[198] Psychiatrist and psychoanalyst Alberto Fontana y Col, working in Argentina, also studied the near-birth experience and its induction with ketamine.[155]

In this model, the journey into altered states of being begins with passage through the first gate: the sensory barrier. This term includes all the non-specific sensory changes on the way in, including colored patterns and hearing ringing, buzzing or chirping sounds. This leads into the biographical level and the individual unconscious. This zone includes all the material from the person's life, from birth to the present, and is the realm of conventional psychoanalysis. Memories are not grouped in a historical sequence, but rather by a common emotional charge or theme. These themes include violence, threats to physical survival, emotional rejection, humiliation, love, happiness, euphoria and other themes. Memories may be grouped according to key shared elements, including physical traumas that can leave a large trace in the psyche. For example, being born with the umbilical cord around the neck may be joined with memories of asthma attacks. The initial event forms the core experience. These memory constellations are fluid and ever-changing rather than fixed, and extend through every level. We can imagine a pattern laid out on the floor of a room, with memories piled on each other like stacked cards at different points on this primal pattern. The model also suggests that beneath this floor is the greater pattern of the "mythic and transpersonal areas" (Jung's "collective unconscious").

The next level on the way in is that of birth and the events around

the time of birth, many of which are physically and mentally traumatic. Regressing to this level may involve visions of hell, purgatory, heaven, and related realms. Grof believes that these may provide a doorway into transpersonal fields. The birth level itself is subdivided into four parts:

1. The Amniotic Universe: There is a lack of boundaries that the re-experiencing adult may interpret as ocean, galaxy, heaven, or a paradise of nature, which may include a fountain or stream (the "Water of Life") or a tree (the "Tree of Life"). These experiences have a strong sense of sacredness. This can develop into an experience of cosmic unity, with feelings of "oceanic ecstasy" and transcendence of time and space. This forms the core of a memory constellation for similar experiences later in life. The feeling of "coming home" relates to this level—a return from exile. Intra-uterine disturbances may involve toxins arriving via the placenta or a lack of nourishment. There may be images in the "re-experiencing" adult of poison, pollution, danger, demons, and evil forces.

2. Cosmic Engulfment and No Exit: This is the first stage of delivery where paradise is disrupted by chemicals and contractions of the uterus, but the cervix is closed so there is no way out. The contractions restrict the blood supply, which produces the same chemical conditions in the brain that can trigger a NDE in later life. The symbolism is of engulfment and imminent disaster, the beginning of the hero's journey, paradise lost, expulsion from Eden, the sense of original sin (that the person must have done something to deserve this fate), descent to the Underworld and the experience of no exit or hell: entrapment in a claustrophobic, endless, hopeless nightmare of pain from which escape is impossible. The person may, for example, believe that they are a sinner in hell, an inmate in an insane asylum, or an archetypal figure such as Prometheus or Sisyphus. They are "cut off" by the contractions of the placenta from outside contact and warmth. Depersonalization (a sense of being unreal) and derealization (a sense that the environment is unreal), where life may be seen as a fake sideshow of cardboard cut-out characters, may be related to this early event.





There may be links to later memories of being a helpless victim of over-whelming destructive force without the possibility of escape, and feelings of constriction and oppression.

3. The Death-Rebirth Struggle: The contractions continue but the cervix is dilated, and the baby moves through the birth canal, fighting against compression. This can be re-experienced as a titanic struggle, with energy building up towards explosive release. There may be images of tidal waves, eruptions, explosions and other cataclysmic events. The struggle can also have sexual, sadomasochistic, aggressive, demonic, and fire components (amongst others) when it is re-experienced. The person may identify with both killer/torturer and victim. There can be an ecstatic element to the experience called "volcanic ecstasy," in contrast to "oceanic ecstasy." There is no longer a hopeless feeling of entrapment. As it emerges, the baby may contact blood, urine, feces, and mucus.

4. The Death-Rebirth Experience: Propulsion through the birth canal, with its build-up of extreme tension, is followed by release and the child is born from the darkness into light, takes a breath, and the umbilical cord is cut. Just before birth a feeling of impending catastrophe may lead to a desperate struggle to stop the process. When re-experiencing in later life, the transition from stage 3 to stage 4 can involve a perception of annihilation of all previous reference points: ego death. This may bring a therapeutic benefit involving resolution of a paranoid attitude arising out of the negative aspects of being born and later events. This includes a sense of being inadequate resulting in endless attempts to "prove something" to the self and others, an unrealistic need to be prepared for hidden dangers, and a compulsion to be in control.

Difficulties with resolution of the various stages in this process may result in a compulsion to continually repeat the process, in an attempt to achieve such resolution. This may be a factor in some types of ketamine dependence, and in some cases of attempted and completed suicide. In 1998, a research report in the *British Medical Journal* linked violent suicide by males to a painful, traumatic birth with obstetric

complications, illustrating once again that some of these theories do have a basis in conventional scientific research.[235] The authors proposed that the birth trauma had laid down an imprint in the mind that wrote the script for a violent death in the adult, with the person leaving this world in a manner echoing their entry into it. This may explain why the re-attempt rate is dramatically lower in persons who had a NDE while attempting suicide:[189] they may have been able to "re-do" aspects of birth resulting in healing.[283] It may also explain some mysterious deaths linked with excessive, non-therapeutic use of ketamine: frequent return to the death-rebirth process may be harmful if it strengthens a destructive pattern, rather than weakening this pattern. Revisiting this realm is not necessarily beneficial. The outcome will be influenced by the set and setting.

Ego death may be followed by rebirth, where there may be visions of white or golden light, beautiful vistas, a sense of spiritual salvation and positive feelings about self, others, and life. There may be images of victory, the end of wars, survival of cataclysms, spring, death and resurrection including religious images, arriving in paradise, visions of God, radiant light, and an experience of the individual self reuniting with what is perceived as its divine source in the "Universal Energy."[198] The different stages are not necessarily worked through sequentially, and any stage may be repeated many times. Thus death-rebirth may be followed by the oceanic ecstasy of stage 1.

If Grof's theories have validity, then the birth trauma may confer an evolutionary advantage in creating a sense of dissatisfaction and a need to keep searching for the "lost paradise," driving humans onward. This can be viewed in more positive terms as the "the drive for novelty," opposing the "drive for sameness" (*i.e.* homeostasis). For the explorers, inventors, discoverers, builders, and creators, the lost paradise is almost never where ever they happen to be at the time.

Some scientists believe that memories of birth cannot be formed because of the immaturity of the higher brain at this time. However, while the maturation process is incomplete, the brain is born with many networks up and running. The claim that newborn babies are





switched off and will not have primitive memories of the birth is more unlikely than the claim that they will. Even very primitive creatures, sometimes comprising just a few cells, are able to learn and remember.

The resistance towards accepting that babies are imprinted by the birth process may have an irrational basis. If, as Freud claimed, we suppress certain memories and are resistant to their recovery in direct form, the resistance to remembering the birth trauma, and the need to disguise this memory in various ways, could be very strong. This resistance may have become culturally ingrained, and may contribute to the deep hatred and irrational fear displayed by some people towards psychedelic drugs. Taking these drugs may result in an alarming confrontation with the birth trauma. The more a person is committed to control, the more likely they are to avoid reminders of this ancient helplessness against overwhelming forces. The need for excessive control may be a result of that helplessness. Those who crave having control over others tend to enter professions in which they are able to weild this control in one form or another—undertaking actions overtly "for your own good," when these behaviors are covertly essential to maintain their own psychic equilibrium. This control may extend to defending against memories of the birth trauma via the suppression of "heresy," the form of such heresy changing with the culture and historical period. The criminalization of psychedelic experience has sometimes been interpreted as the "suppression of a heresy,"[352, 611] and some of those who become involved with government and law enforcement have been said to have a need for control over others (also see Chomsky 1992).[67]

The stage from which society is prepared to accept the start of memory has been gradually pushed further and further back. Recent data shows that the fetus can hear and remember sounds heard at 20 weeks after conception.[62, 131] The researchers found that memory and perception could develop in areas once thought to be too primitive to store memory, such as the thalamus.

## Transmitters and Receptors

> Real science can be far stranger than science fiction and much more satisfying.[206]
>
> **Stephen Hawking**
> "The Cosmos and Me," *The Sunday Telegraph* (1998)

It's good to have an open mind, but not so open that your brain falls out. In this section we will look at the contribution of the brain itself. The section is written for the layperson. For a more detailed, up-to-date account of the neurochemistry of the NDE, see Jansen 1999.[260]

Brain cells can have many branches and sub-branches extending outwards from a central core. Where a branch of one cell meets a branch of another, there may be a special junction. On one side of the junction, there are storage pools containing messenger molecules called neurotransmitters. When an electrical impulse travels down a branch of the nerve cell, it arrives at a junction and causes these storage pools to release their neurotransmitters into the gap between the cells. These messengers travel across the gap and land in special docking bays on the other side called receptors—like a key into a lock. The chemical key may turn the lock and trigger a cascade of events within the cell, including setting off a new electrical impulse in the nerve on the other side of the junction, or the activation of genes to produce proteins.

There are tunnels through the cell wall connecting the inside with the outside. Most cells are bathed in a sea of dissolved salts that washes in and out through these tunnels. Sometimes these tunnels contain binding sites. If a drug binds to such a site, the tunnel can become blocked. This may stop salts from moving in and out, so no current flows. The messenger molecule may bind to its receptor on the cell surface, and turn the key in the lock, but while the tunnel is blocked no impulse can be fired.





## Blocking the Tunnel

Ketamine binds to receptors (called PCP receptors for historical reasons) inside tunnels and causes a blockage. The outer end of the tunnel is attached to a glutamate receptor (called an NMDA receptor) on the cell surface. The whole complex is known as an NMDA-PCP, or N-P receptor. The "N" part is on the outside and locks onto glutamate, and the "P" part is on the inside of the tunnel and locks onto ketamine. There are also binding sites for other chemicals, such as magnesium, which block the same tunnel. The complex is like a large space station with several docking bays for different crafts.[12, 86, 390, 396, 421, 463, 585]

It was once thought that sigma receptors were the same as PCP receptors, and that they were opioid receptors. We now know that sigma receptors are completely different entities.[268–9, 273, 276, 278, 280]

The N-P receptor complex plays important roles in thinking, memory, emotion, language, sensation, and perception.[78, 86, 427, 463] Ketamine has effects in all of these areas, changing the way in which incoming data is integrated or blocking it out altogether. This can isolate parts of the brain from the setting, removing players from the central stage, which may then fill with other realities originating from the depths of the mind.

Glutamate is an excitatory messenger. It turns on the cell, triggering an electrical impulse. Ketamine opposes this action by blocking the tunnel.[12, 585] Ketamine also has direct and/or indirect effects on opioid,[148–9, 160, 165, 212, 349, 554, 627] dopamine,[158, 231–2, 300, 443, 485] serotonin,[314, 366, 391, 416, 464] cannabinoid,[494, 566] nitric oxide,[1, 61, 365] noradrenaline,[73, 635] sigma,[227] GABA (gamma amino-butyric acid, an inhibitory messenger),[121, 366] and acetylcholine systems[73, 123, 415, 426, 589] amongst others.[32, 216, 327, 333, 444, 468] These are different types of messenger molecules. As the dose level rises, the drug becomes increasingly promiscuous and binds to more and more types of receptors. There are also hormonal effects that include release of the stress hormone, cortisol.[6, 462]

Most large cells in the higher brain release glutamate as their messenger.[87, 266–7, 272, 274–5, 277, 279, 622] Most small cells balance this by releasing

GABA.[121] These excitatory and inhibitory messengers are amongst the commonest and most important in the brain. They are yet another example of the on/off principle that has been said to operate from the subatomic level "up" to that of the universe itself.

Switching off a cell by blocking its N-P receptors does not result in a switched-off brain. The switched-off cell may have released the inhibitory GABA. If inhibition is removed, the next cell in the chain becomes very activated, instead of being switched off. Also, glutamate can switch on other receptors, not just N-P sites, and may excite the brain in these other ways. This explains why the higher brain is brightly lit in scans at psychedelic ketamine doses, as is seen in the work of Vollenweider and colleagues[121, 607–8] (see also Anand *et al.* 2000).[11]

The similarity between NDE and ketamine experiences suggests that some near-death experiences will be due to blockade of N-P receptors.[241–50, 247–9] A sudden fall in oxygen or blood sugar, which may (for example) result from interruption of the blood supply during a heart attack, has been shown to cause a flood release of glutamate.[31] Epileptic attacks, head injuries and too much carbon dioxide can also produce a flood.[505–7, 451] Glutamate turns the receptor lock, opening tunnels so that "the sea" rushes in. The cells swell and burst if the stimulation is excessive and prolonged. Thus too much glutamate overexcites cells, which die. Ketamine can prevent the brain damage that results via the same mechanism that produces psychedelic effects: blockade of the tunnels so that "the sea" cannot enter.[507, 527, 547, 618]

This discovery led me to the prediction that the brain would have a natural protective mechanism against the glutamate flood.[241–50, 247–9] This protection could be a counter-flood of natural tunnel blockers. The resulting block will produce ketamine-like psychedelic effects as the two phenomena are linked. While a person is having a NDE the brain is preserving itself from damage. The link is tunnel blockade, a block that can happen naturally, for example as a protective brain response if oxygen falls after a heart attack, or that can be provided by ketamine. It is this block that can result in a NDE, not the glutamate flood itself. The degree of damage and the mental state that result





depend on the final balance between toxic and protective forces, a form of battle between "good and evil" played out at the chemical level.

Patients who were oxygen-deprived for long periods and had profound near-death experiences sometimes survived the episode with unimpaired brain function, to the astonishment of their doctors.[512] The lack of damage may result from a very effective mechanism for blocking over-excitation. So people who can have a NDE are less likely to suffer brain damage when the blood supply to the brain is cut off. These may be the same group as those who report "emergence phenomena" after ketamine. According to Michael Sabom, author of *Recollections of Death: a Medical Investigation*, around 40% of the population have had some form of NDE when the very widest definition is used, although unpublished work by Peter Fenwick at the Maudsley hospital in London, indicates a much lower figure amongst those who had "clinically died!"[512] The percentage reporting emergence phenomena after ketamine anesthesia is also close to 40% in many studies.[1, 213, 328, 456, 460, 513] Until recently, the figure Parke-Davis gave on their Ketalar® data sheet was 12%. This was too low, and has been dropped from the latest data sheet.[466]

A natural tunnel blocker will protect the brain from damage while generating a state of being that also holds the flood of overwhelming anxiety at bay. The NDE may be beneficial for the physical brain as well as having the potential for a positive mental outcome. The benefit may be even greater where the forces of the psyche give the person a strong message to "go back" in terms of a mythological drama, and tell them that it is not their time to go. This might be the final expression of the deep drive in the mind to survive.

Consider how much of the brain may be lost in a head injury and yet the person returns to normal, or near normal. Consider how little electrical activity is recorded during deep sleep, and yet the awakened sleeper may describe powerful dream fragments.[297, 348, 628] It then becomes possible to imagine the ailing brain screening this final performance, although there may be little activity left that we can detect.

As those who have near-death experiences do not actually die, when we take this word to mean a permanent end of life in the body, the evolutionary advantage is considerable.

### The Counter-flood

A number of natural blockers now have a well-established existence, such as NAAG (N-acetyl-aspartyl-glutamate) and magnesium, both of which protect cells from excito-toxic damage.[92, 144, 457, 467] NAAG releases dopamine into the brain's so-called "pleasure centers"[612] (such as the nucleus accumbens), as do ketamine, heroin, cocaine and other addictive drugs.

Changes in the magnesium level affect sleep and dreaming.[118] Ketamine can produce more intense experiences when taken in a flotation/isolation tank.[364] This may be because the magnesium salts, used for buoyancy, are absorbed through the skin into the bloodstream, and thus add to the effect of ketamine in the brain. The ordinary salt (sodium chloride) used initially in these tanks irritated any skin cuts, but magnesium chloride "calmed down" these nerve fibers.[364] We now know that it does so by blocking pain-conducting N-P receptors. Kynurenic acid is another natural drug in the brain that switches off the N-P complex.[417, 369] The endopsychosins, mentioned in my earlier work as "natural N-P blockers," were probably a false lead as nothing more has been heard about these compounds for 10 years.

### Ibogaine, *Cannabis,* and the Glowing Leopard

Ketamine is totally unnatural and has never been found within plants or animals (or at least not yet). Many psychedelic drugs are either found in plants or have plant analogues. Numerous naturally-occurring brain chemicals are also found in plants. The neurotransmitter serotonin is derived from tryptophan, found in bananas and pineapples (for example), and serotonin itself is found in stinging nettle (*Uritica dioica*) and other plants. The potent psychedelic drug DMT is found in both the human brain and in numerous South American plants,





such as *Diplopterys cabrerana*, *Psychotria viridis* and some *Anadenanthera* species, to name a few. LSD is a close relative of drugs in the ergot fungus (*Claviceps purpurea*) and morning glory seeds (*Impomoea* species), while psilocybin is found in magic mushrooms (psilocybian species). These drugs are very similar to serotonin, and bind tightly to serotonin receptors. This relationship between plants and the brain is far-reaching, extending to opiates, cocaine, the belladonna alkaloids, caffeine, *Cannabis* and many other drugs.

One psychedelic drug has been derived from plants that does block N-P receptors. This drug is called ibogaine, and it is extracted from the roots of the *Tabernanthe iboga* plant of Central Africa.[66, 480–1] Like ketamine, it also acts on many other systems in the brain[174, 481] and has been used to treat drug dependence in the United States and other countries.[392] In central Africa, high doses of *T. iboga* root are taken for several days until a dissociative trance results, as part of tribal rites of initiation. The purpose of these rites is to provide members of the tribe with a deeper understanding of the meaning of life and death. Curiously, while we pass laws attempting to prevent people from having any drug-induced psychedelic experiences, there are other societies where such experiences are compulsory and actually demanded by local customs. Among the Fang people who invaded Gabon, the ibogaine-containing *T. iboga* root gave rise to a new cult combining a rich Christian tradition with worship of the leopard, totemic God of the tribe. This cult is known as "Bwiti." Taking high doses of ibogaine for several days can result in a type of NDE. The Fang refer to the experience as "meeting God."[35] One recent study has cast doubt on the role of N-P complexes in producing the effects of ibogaine.[210] If true, then we still do not have a plant equivalent for the dissociative anesthetics other than alcohol.[337, 424, 629]

Italian psychiatrist Antonio Bianchi described a Fang rite he was present at, which involved two girls making the transition to womanhood. After awakening from her ibogaine-induced trance, one of the initiates reported:

> Separation of the spirit from the physical body and gradual upwards ascension; overcoming a series of obstacles such as rivers…encounters with dead relatives…for both girls the experience came to a climax with an encounter with a leopard glowing with a shining golden light.[35]

Near-death experiences can also be induced by a high dose of hashish.[545] There is mounting evidence that *Cannabis* receptors sometimes work closely with N-P receptors,[494, 566] so once again the final common mechanism may be the same (*i.e.* indirect blockade of N-P complexes). It is probable that more selective ketamine-like drugs will eventually be discovered in plants. Glutamate, the most important messenger of all (used by most large neurons and crucial to abstract thought), was not widely accepted as such until the early 1980s, decades after serotonin was discovered. There are still numerous discoveries to be made.

### The Many Paths to Enlightenment

Some people demand that any explanation for the NDE must apply to every single case, like a law of physics. However, not only do the laws of physics no longer apply to every single case, the same altered state of being may be reached by many different routes, like tracks through the forest that all arrive in the same place. The NDE is a multi-layered structure, and such structures may involve multi-layered truths. Near-death experiences are the final common result of several different causes—not a single cause that always operates. My hypothesis does not apply to every NDE, and is not necessarily incompatible with the theories described below or with a belief in "life after life." Brain-based ideas are not necessarily in opposition to beliefs that there is a soul able to "continue" after the death of the body, or that consciousness can exist independently of a living brain. My hypothesis limits itself entirely to physical bodies that have not permanently ceased to live, as indicated by the recovery of the body's owner. Regardless of how long a heart has been stopped, if it restarts and the





person recovers, then they have not died by definition. Those who are unwilling to accept this should develop a new terminology to describe states from which a person returns, using words other than "died" and "death." As Michael Sabom pointed out, we can resuscitate but we cannot resurrect.

The theory may move us closer to placing the suggestion that the brain is re-tuned to "broadcasts" from transpersonal fields (if such fields actually exist), on to a more scientific footing. Oxford physics professor Roger Penrose comes at this question by starting with fields and ending up with quantum waves in microtubules within cells.[469] I am coming at the same issue from the opposite direction, starting at the psychological end and progressing through biological levels until the "border" is reached beyond which lie these hypothetical "fields." One goal of modern science is a "unified field theory" bringing everything together: laws for the very large and very fast (Einsteinian relativity) and laws for the very small (quantum mechanics), as these two systems are currently irreconcilable. This reconciliation may be inherently impossible, or only possible to a degree that something else irreconcilable then appears, to stare back at us from the other side of the divide. We can get closer and closer to the line that divides the yin from the yang, but the line itself does not really exist: we are either in the black or the white, in consciousness or in matter, just as a photon is either a wave or a particle while observed, and only both when we are not looking. The animation, that which makes a person "alive," may lie within this non-existent line, even if it requires a certain number of genes to animate the body—just as some physicists now tell us that the core of everything is actually nothing. If transpersonal fields exist and are eventually understood within the fold of science, then the line itself will have shifted to a new frontier, as has happened with other discoveries in the past which shifted the balance between "science" and "spirit." Watching molecules in the brain on new scanning machines, or "creating life" by injecting several hundred essential genes into a denucleated cell host, does not bring us any closer to the end of the rainbow, religious philosopher Rudolf Otto's *mysterium tremendum*.

### Dreaming

There is some common ground between dreams, ketamine experiences, and near-death experiences, which can occur during sleep.[509] In all of these states there is a reduced input from the outside world. There is some evidence that many of those who do not recall their dreams are also unable to recall ketamine journeys. In a study of 150 patients, 45% recalled dreaming at home.[209] Of these home dreamers, 75% described having dreams during ketamine anesthesia (50 out of 68), while only 2 of the 82 patients who were not home dreamers had dreams during the anesthesia. This is a highly significant and fascinating result meriting further research. The percentage of home dreamers is the same as that reporting ketamine journeys in many anesthetic studies, about 40%, and also the same as the 40% reporting near-death experiences when the widest possible definition of a NDE is used.[512]

A gene has been found which, it has been suggested, may account for why some persons with schizophrenia show a greater "psychotic" response to ketamine than others.[377] Whether the status of this gene plays any role in explaining why some people have few psychedelic effects from the drug, while others have profound experiences, remains to be seen.

Ketamine can sometimes produce rapid-eye movements (REM) and brain wave patterns like those seen during dreaming.[143] Part of the brain wave tracing made during sleep is called the K-complex, but this term is a coincidence. The K-complexes recorded during natural sleep and during ketamine experiences are the same.[10] Sleep and dreaming involve the glutamate system and indirect blockade of N-P complexes.[118, 142, 369]

### Epilepsy?

Epilepsy is brain excitation that has escaped from the usual calming systems. Some types of epilepsy do not involve fits in which the person falls to the ground (*i.e.* "grand mal"). This type of epileptic fit





("temporal lobe") may result in a NDE.[471, 511] The death of cells due to epilepsy results from excessive release of glutamate.[451] This is likely to trigger the protective system discussed above, producing mental by-products. Ketamine can be both anti-epileptic and pro-epileptic.[524, 578, 586, 602] What it does may depend on the state of the nervous system it enters.[341, 431, 603] It may calm the over-excited brain and over-excite the calm brain, producing excitement by switching off the inhibitory system.[121]

### An Endorphin Rush

A flood release of natural opioids called endorphins may also contribute to the NDE.[60] A sudden increase in endorphins was seen in the brain and body fluids of dogs that were conscious at the moment of death.[562] However, endorphins are unlikely to produce a NDE on their own. They are not usually classified as psychedelic drugs although they are occasionally linked with feelings of euphoria, such as the "high" that sometimes results from running. Injection of beta-endorphin into people has pain-killing effects but does not usually result in seeing God.[461] Nevertheless, ketamine can also release beta-endorphin,[169] there is cross-talk between the glutamate and opioid systems,[32, 53, 627] and ketamine can activate the kappa opioid receptors[217] that have long been suspected of playing a role in producing some psychedelic effects.[474] Beta-endorphin probably does play a role in both NDE and ketamine effects, but it is not the lead actor.

### Low Oxygen/High Carbon Dioxide

When the blood supply is cut off, brain oxygen levels plunge and carbon dioxide levels soar. Studies involving a gradual fall in oxygen reported the effects as little more than mental clouding.[211] However, these studies are not an accurate model of events in cardiac arrest (for example) where there is a sudden fall in oxygen levels. As discussed previously, this is known to cause a glutamate flood that can in turn trigger the process leading to a NDE in some people.

The evidence that high levels of carbon dioxide play a role is much stronger. A carbon dioxide enriched breathing mixture can result in typical NDE effects such as bodily detachment and being drawn towards a bright light, and the effects persist for a while after blood gases have returned to normal. L.J. Meduna thought that altered states produced by this method could be an aid to psychotherapy.[407] His book, published in 1950, is called *Carbon Dioxide Therapy*, by which he meant "psychotherapy." Stanislav Grof's Holotropic Breathwork™ is a form of hyperventilation that raises brain carbon dioxide levels in a psychotherapeutic set and setting.[198] An excess of carbon dioxide may also trigger a glutamate flood leading to a counter-flood and hence a NDE.

### Serotonin and DMT

LSD and DMT bind to serotonin receptors and this is thought to "push the start button" for a cascade of events resulting in a psychedelic trip. LSD experiences are less likely to initiate the classic NDE than ketamine experiences. With LSD, there is often an increase in sensory input and awe-struck engagement with the external world. There may be a fascination with details such as patterns on the wallpaper. The "reducing valve" that normally filters incoming data seems to open rather than close.[229] This is in marked contrast to the sensory deprivation produced by ketamine, which turns the valve so that it opens onto inner realms instead. LSD-like visuals do not closely resemble the internal visions of ketamine and the NDE. Ego death as experienced on LSD may have a different quality from the conviction of having died that can arise with ketamine. Loss of contact with the external world leading rapidly to "the tunnel trip," and to the experience of going somewhere at high speed, is not a typical LSD effect (although it can occur).

Rick Strassman is a psychiatrist who has been licensed by the United States government to do human research with the LSD-like drug DMT. In these trials, DMT was sometimes given i.v. in high doses.[576–7] He





found that DMT could produce dissociation and dream-like imagery very quickly if the taker lies down and closes his or her eyes. However, lying down and closing the eyes immediately reduces excitatory input and starts to recreate a ketamine-like situation. Dissociation may be the end result in anyone who closes his or her eyes. Strassman described several near-death experiences produced by DMT: persons who were convinced that they had died, hallucinated resuscitation efforts being applied to their bodies, saw themselves lying in bed, and met and interacted with entities, angels, beings of light, guides, and God(s). Some of these people lost their fear of death as a result.[575] Ketamine does stimulate the serotonin messenger system, so it is likely that this system adds to the final tapestry.[314, 376, 391, 416] There are also studies showing that LSD-like drugs affect the glutamate system indirectly.[18, 464] We now know that the brain is a highly interactive place. The days of trying to explain a mental state in terms of only one neurochemical system should be over.[7]

It is not surprising that some of the effects of LSD and DMT can be traced back, through various "intermediate" systems, to the glutamate system. Glutamate is released by most large cells in the higher brain, both to talk to each other and to send messages down below. It plays the key role in intelligence, memory, personality and the features that make us human: language, thinking ahead, making tools, and abstract thought, for example. It is also the main messenger of sensation and perception. LSD affects all of these areas. Interference with glutamate transmission has immediate, dramatic effects. There is extensive loss of glutamate-releasing cells in Alzheimer's disease, and to a lesser extent in schizophrenia. In contrast, animals that have experienced pruning of the serotonin system, caused by drugs such as MDMA,[495] do not behave differently from other animals once they have recovered from the effects of the drug (*i.e.* after one week). They show no behavioral evidence that their serotonin terminals had been pruned by repeated injections of ecstasy. Test monkeys are not anxious or depressed a month after having the MDMA, although the persistent changes are present and can be seen through a microscope.[496] This

suggests that serotonin is far less indispensable for the functioning of the human brain than glutamate. It is likely that when serotonin is lost its functions are taken over by other brain chemicals.

The salvinorin A mystery also tells us that we still have much to learn. The potent psychedelic drug salvinorin A does not have a significant binding to serotonin receptors, N-P receptors, or any other site linked with psychedelic effects,[440] at the concentrations at which it has highly dramatic effects on the human mind (if you increase the concentration of a drug far enough, it will eventually bind to almost anything). Salvinorin A is active in the microgram range, and almost as potent as LSD. It is derived from a South American mint plant, *Salvia divinorum*, and is not a controlled drug at the present time.[592]

### Psychology

The NDE may be an adaptive mechanism of the mind that alerts a person to the threat of death while the potential tidal wave of fear is held at bay. The reality can then be integrated without panic.[446–7] This model may apply to situations such as falling from a cliff, and was originally developed from the study of near-death experiences in mountain climbers. We know that one part of the mind can split off (dissociate) from another for psychological reasons, giving rise to hysterical paralysis, multiple personality, "automatic" behavior, out-of-body experiences, and fugue states in which the person may travel to other places in a trance and believe that they are somebody else.[628] The trauma of imminent death may cut off the external world by producing regression to a pre-verbal level of being, which is experienced as mystical ineffability (where "ineffable" is taken to mean "not expressible in words"). Again, the purpose is protection from anxiety so that the ego can attend to unfinished business.[188] These mental changes will still involve chemical events. Any sudden shock, such as being told that a loved one has died, is often followed by an abrupt release of substances to make the heart race, breathing become shallow, create "a pit" in the stomach, and/or feelings of being "knifed through the





chest." These substances include hormones such as noradrenaline and cortisol (both of which are released by ketamine). There will also be a flood release of substances in the brain in response to shock.

What about the spontaneous NDE, which occurs when there has been no sudden shock? There is no reason why the mechanisms outlined here might never be activated spontaneously. Sometimes a NDE has occurred while the person was asleep. These near-death experiences may result from activation of the dreaming process. In epileptic fits, there can be a sudden onset of major electrical changes in the brain without any obvious cause, when the sufferer is awake and relaxed. An apparently normal person can have spontaneous auditory and visual hallucinations with no obvious cause. For example, John Lilly described dissociative episodes and visions that occurred many years before he took any psychedelic drugs.[363] Also relevant to the issue of shock is the suggestion that the speed of the i.v. route may be more likely to create a sudden, subjective sense of separation from the body into another reality.[575] However, the speed of the change alone is not responsible. A high oral dose of ketamine can still produce the experience of apparently traveling down tunnels at high speed.

### NDE and a Clear Mind

Some people who have had a NDE say they had a clear mind at the time, regardless of being apparently unconscious and malfunctioning, and consider this to be evidence that the brain could not have produced the phenomenon. However, the brain and mind can be organized in ways other than the normal waking pattern, and very little of our vast brain is really essential. That near-death experiences occur in brain-damaged people does not prove that a NDE is possible with no brain at all. Those who assume that drugs can only cause confusion sometimes use "the clarity argument" to dismiss drug-based NDE models. It is obvious from the accounts in Chapter 3 that some ketamine experiences can appear to be very clear. There are even people who feel that the "true" clarity occurs in psychedelic states, when they be-

lieve that the veil of illusion is cast aside, and the universe behind the curtain is partly revealed. From their perspective, it is persons in the "normal" external world who are confused, lacking in insight, and suffering from delusions from which they could seek enlightenment. This is the position taken by some Eastern religions. What is confusion to one person may have life-changing meaning to another.

Most people would agree that falling asleep involves a loss of consciousness, and yet an altered state of being can be rapidly re-synthesized in the form of dreaming. There may be many forms and levels of consciousness. The medical model offers just four options: coma, stupor, clouding, and fully awake. Consciousness is viewed as being like a light bulb: "off," "dim," or "on." This model dumps altered states of being into a bin marked "hallucinations," implying nothing other than dysfunction, and requiring no further thought or analysis. However, it is possible to subscribe to the medical model of consciousness as "off," "dim," or "on," and still accept that there are different states of being during which consciousness itself is simply "on." One may then be in the same state of consciousness when having a ketamine experience as when awake and drug-free, although the former is an altered state of being. The light bulb stays on but it changes color like a fiber-optic lamp. An injection of the barbiturate thiopentone will change this by producing an actual loss of consciousness: the light is turned off.

Ketamine does not simply produce dysfunction. Brain scans show that the drug causes some specific changes linked to specific mental states. The argument that the brain cannot produce a NDE because the "dysfunctional" brain can only produce stupor, clouding or coma is wrong. So-called "dysfunctional" brains can produce far more than these limited options. In a similar vein, it has been argued that a NDE cannot be brain-based because the brain is unable to form a memory while not fully conscious.[146] That patients who sustained a head injury may recall a NDE, but not events from the time of the injury, is sometimes cited as supporting evidence. However, there may be little memory for events around the time of a head injury precisely because a





dissociative experience has "removed" the person from those events to participate in an inner drama instead, *i.e.* there is a clear memory for a NDE but none for external events. If we can only form a memory when fully conscious, how do we form a memory of our dreams? Many people give detailed accounts of ketamine journeys during which they did not appear to be conscious at all. The capabilities of the brain are often under-estimated.

We can also learn about the mind/brain interface from night terrors, which are distinctly different from nightmares.[297, 348, 628] The person wakes from stage 4 sleep (deep sleep) with a loud panicky scream and appears confused and disoriented for several minutes. Nevertheless, they are able to remember key fragments of dreams that have a particular nature, such as being trapped in some way. The person explains that they screamed because they developed a sudden awareness of having been locked into a place from which there is no escape. They may also report being in a place "without co-ordinates." These experiences can arise in a brain in which electrical activity is very different from both that of "normal" dreaming and normal waking consciousness. The person may not hear the scream. Their only knowledge of this may be the reports of those who sleep with them, and a sore throat. However, they do recall the dream fragment. These terrors do not arise during the normal REM dream periods. It is clear that the apparently unconscious person, with relatively basic brain waves, is quite capable of forming memories of their inner experience. The traditional link between REM sleep and dreams has recently unraveled. Some sleep experts now accept that the brain is always involved in what they refer to as "mentation," not just during REM sleep. In other words, dreams do occur outside of the REM periods.[561]

### The Tank Trip

Sensory deprivation can result in out-of-body experiences. Lilly achieved these states in a flotation/isolation tank, and described the tank as "a hole in the Universe;" a "tank-hole" rather than a"K-hole."[364]

In many near-death situations, sensory input is cut off. This led to suggestions that sensory deprivation explains the NDE. This theory was weak in 1975 when Moody observed that tank experiences themselves could not be explained, and that appealing to tank experiences to explain the NDE was merely swapping one mystery for another.[422] (Moody also mentions ketamine, one of the first to do so.) Otto's *mysterium tremendum* may never be found behind a receptor, but science has raced ahead since 1975. At that time, glutamate and N-P receptors were still waiting in the wings. These are the links joining tank trips, ketamine journeys, and near-death experiences together.

Memories may be partially suppressed by a swinging gate that admits external signals when we are fully conscious and concentrating upon an external task. If this input is cut by an isolation tank, ketamine, sleep, or a heart attack, for example, and if this occurs together with inner stimulation, the gate swings the other way and stored memories and other material may be released onto the main stage. These sets and actors are then organized into a drama by various forces in the mind, including psychodynamic forces (amongst others) as recognized by Freud.

N-P receptors are one type of molecular "gate," and are involved in both forming and recalling memories. They are very dense in areas where data from the external world are integrated with the inner world.[272] Ketamine closes the gates to incoming data, allowing material to emerge from the depths.

### S(+)Ketamine and the NDE

The same drug can have a variety of shapes. "S" means that a molecule is wound in an anticlockwise or Sinister direction, as in walking the "wrong" way (or the right way, depending on one's belief system) around a church ("walking widdershins"). The shape that is wound clockwise is "R," or Rectus. If a left-handed S shape is reflected in a mirror, the original is called "+" and the reflection is called "–"( *i.e.* the shape and its reflection are S(+) and S(–) respectively).





S(+)ketamine is half of the Ketalar® and Ketaset® mixtures, and is sold in some countries (*e.g.* Germany) as a separate product that is alleged to be superior to Ketalar® for some medical purposes. This "new" product has given rise to a myth that "the psychedelic part" has been removed from the mixture. At the same dose as Ketalar®, S(+)ketamine causes a much faster loss of consciousness (due to an action on opioid receptors),[217] has a much higher risk of suppressing breathing,[160, 349] and has a faster recovery time.[160] This does reduce the number of psychedelic experiences reported at these doses. However, at lower doses S(+)ketamine is a potent psychedelic drug:[6, 113, 129, 607]

> Sub anesthetic doses of S(+)ketamine produced depersonalization and derealization phenomena, thought disorders and apathy…visual disturbances ranged from pseudohallucinations to elementary and complex hallucinations. Background noise was unusually loud…all of the subjects reported distortion of the body-image, loosening of ego-boundaries, and alterations of the sense of time and space variously associated with emotional changes ranging from heightened feelings to euphoria (30%), indifference (30%) or heightened anxiety (40%)…Equimolar doses of R(–)ketamine did not produce any psychotic symptoms in the same subjects under investigation. Most of the subjects experienced, however, a state of relaxation during R(–)-ketamine infusion…[607] (In the original paper, the "+" and "–" signs were left out; I have reinserted them above to avoid confusion.)[64]

So it was actually the less potent, less psychedelic partner, R(-)ketamine, which was removed from the mixture. Here is a report arising from use of the new product in a non-laboratory setting:

> We have tried three times (50 mg, 100 mg, 110 mg nasal) a split molecule of K (supposedly the more psychedelic properties). The third experience ended with my wife and I being

able to see each other and ourselves with tightly closed eyes. The room and both of us were seen through a purple membrane-like fluid. This experience seemed to last for 5 minutes.

**K.U.**

### Science, Spirituality, and Reductionism

Any mention of the brain in discussions of the NDE can lead to unfavorable comments about "reductionism" from some people who have spiritual beliefs. But applied science does not necessarily mean boring reductionism and unpleasant smells. In the early 17th century, the Pope refused to look through Galileo's telescope. Galileo was placed under house arrest for confirming the Copernican view that the Earth goes around the Sun. The Pope may have failed to understand that the universe opened up by science was vastly more mysterious and exciting than the very limiting, dull, Earth-centered reality of revolving spheres approved by the ancient church. The telescope actually increased a sense of wonder in those with a deeper understanding. A narrow pre-occupation with the spiritual is not necessarily more mind-expanding, colorful, or rewarding than a scientific approach. Also, it is not always clear what is science and what is spirit. The science of one age may be the spirit or magic of another, and vice versa. What was once impossible and "spiritual" or "magical" now seems far more possible and scientific as a result of the new physics, and other developments. The production of a NDE with ketamine does not necessarily diminish spiritual issues, nor does it rob the NDE of its meaning and value. We now consider some of the science of Newton's day to be superstitious nonsense (Newton himself spent many years dabbling in alchemy), and if transported from his time to ours, this secret alchemist might regard a television as magic (whether it was good or bad magic could depend on the programs).

New discoveries suggest a common basis for some ketamine experiences and near-death experiences. This hypothesis links the physical and mental theories together, and does not devalue the view that a NDE may involve realms beyond personal biography. It does explain





events in the brain that might allow such experiences to occur in a body that has not permanently ceased to function.

Explanations of what is happening in the brain during a NDE are not always dull and restrictive. Perhaps the real boredom lies in attempts to pull an all-obscuring, mystical shroud over the NDE that advances us no further in any direction. There is little adventure in turning away from new knowledge towards ancient ideologies. These have not advanced our understanding further for thousands of years. The value of scientific studies is that they produce new findings, ideas and treatments. When correctly applied they can open up the universe rather than closing it in. When misused, the results of science (technology) robs life of its meaning and puts the planet at risk.

The reality maps made by mystics have sometimes been quite similar in different cultures throughout history. These maps were thus labeled "the perennial philosophy" by Aldous Huxley.[228] The perennial philosophy, which includes such statements as "all boundaries are an illusion," can also—like science—either add meaning to life or render it meaningless. One side of the message is to encourage creative acts, to reproduce, and to celebrate the nature of differences. The other side is to minimize differences and creativity. This may involve an actual withdrawal from life, like a fasting monk in a cave. Being told that all distinctions are an illusion is not useful when considering the distinction between having Alzheimer's disease and not, for example. This illness involves glutamate and N-P receptors, is of relevance to ketamine-based memory studies, and is rarely claimed to have been cured by magic where the diagnosis was confirmed by examination of brain tissue under a microscope (still the only reliable way of making the diagnosis despite various claims to the contrary; Alzheimer's disease is widely over-diagnosed). Those who recover did not have the illness in the first place. This distinguishes Alzheimer's disease from cancer, which can go into remission. Destroyed brain cells do not have this option. If ketamine is given to persons with Alzheimer's disease, they do not contact an unchanging "higher self" that allows them to suddenly recognize their loved ones, or even remember their own names in

advanced cases. The brain is not an organ we can afford to ignore. It can never be irrelevant to the living.

The yin-yang anesthetic revelation, which is as an aspect of the perennial philosophy, also has a side that involves a terrifying lack of meaning—just like science. This was well expressed by William James' account of his adventures with nitrous oxide:

> The keynote of the experience is the tremendously exciting sense of an intense metaphysical illumination. Truth lies open to the view in depth beneath depth of almost blinding evidence…the ego and its objects, the meum and tuum are one…every opposition, among whatsoever things, vanishes in a higher unity in which it is based…God and Devil, Good and Evil, Life and Death, I and Thou, Black and White. The mind saw how each term belonged to its contrast through a knife-edged moment of transition which it effected. But now comes the reverse of the medal…the rapture of beholding a process that was infinite changed, as the nature of the infinitude was realized by the mind, into a sense of dreadful and ineluctable fate…in the light of which whatever happens is indifferent. This instantaneous revulsion of mood from rapture to horror is, perhaps, the strongest emotion I have ever experienced…a pessimistic fatalism, depth within depth of impotence and indifference, reason and silliness united, not in a higher synthesis, but in the fact that whichever you choose it's all one—this is the upshot of a revelation that began so cozy bright.[238]

The better option in our attempt to understand these states of being may be to consider both scientific and spiritual issues, rather than ignoring one or the other. Niels Bohr observed that, "The opposite of a correct statement is a false statement. But the opposite of profound truth may be another profound truth."[41] The divide between what is





labelled as a "scientific understanding" and a "spiritual understanding" has been inconstant, and has tended to change over time. We can view "science" as that which can be measured and "spirit" as that which must be experienced directly. However, there are areas where such divisions are not easily made, and when they are made may not prove to be useful, valuable, or historically durable.

Those who were determined to apply internally-derived religious concepts to the external world would not look through Galileo's telescope, and confined him to house arrest. The eternal battle over "reality" has recently shifted from the outer space of Galileo's day to the inner space issues of our own times. For some mystics, it is the new brain science that is the telescope of the day, through which they refuse to peek. For certain "scientific" groups, it is mind-revealing medicines that may represent the contemporary threat to their world-view. In a mirror image of Galileo's situation, these latter groups apply externally-derived "scientific" concepts to dismiss any internal spiritual issues raised by these substances, and may even advocate the imprisonment of those exploring these realms in this way.

As noted elsewhere in this chapter, some of the fear surrounding particular types of knowledge, and the routes to that knowledge, may be related to suppression of memories of the birth trauma. "Knowledge" itself is responsible for this trauma on several levels, especially if we equate this word with our large brains. It is the development of the higher brain that is responsible for the pain of birth, as the head became too large to pass easily through the birth canal resulting in a lengthy struggle in many cases. There is some evidence in the fossil record that at one point the head may have been even larger than it is now; but perhaps too many women died in childbirth and genetics ended up favoring those with smaller heads. From this perspective, it becomes easier to understand why crimes involving knowledge and heresy have always been viewed as amongst the most serious, leading back as they do to "original sin." Death has long been the sentence for "knowing too much:"

> And the Lord God commanded: Of every tree of the garden thou mayest freely eat, but the tree of the knowledge of good and evil, thou shalt not eat of it, for in the day thou eatest of it thou shalt surely die…And the Lord God said unto the woman: What is this that thou hast done? And the woman said, the serpent beguiled me and I did eat…Unto the woman he said, I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children…unto dust shalt thou return.
>
> **Genesis 2, 3, 4**; King James version

Nevertheless, the exploration of the brain/mind interface may also be one of the most exciting adventures humans have undertaken. It was the spiritual Pope who was being dull and reductionist, not the materialist Galileo, who held a key made of glass and metal that opened the door to the outer universe. The tables have now turned, and it is the door to the inner universe that is sometimes forced shut by an excess of what might be described as "medical materialism:"

> Medical materialism finishes up St. Paul by calling his vision on the road to Damascus a discharging lesion of the occipital cortex…it snuffs out St. Theresa as a hysteric, St. Francis of Assisi as an hereditary degenerate…and medical materialism thinks that the spiritual authority of all such persons is thereby successfully undermined.[239]
>
> **William James**
> *The Varieties of Religious Experience* (1902)

It is not my intention to negate any spiritual implications that near-death experiences may have by explaining these states in brain/mind terms.



Chapter 5

# The Metaphorical Mental Modem

*God not only plays dice, He also sometimes throws the dice where they cannot be seen.*[205]

**Stephen Hawking**
*A Brief History of Time* (1988)

## The Quantum Mind

This chapter considers some theoretical explanations for certain ketamine effects which are beyond what was thought to be possible in the old Newtonian, clockwork universe. Important pillars of the "mechanical view" were that all possible forms of energy and fields have already been discovered and no mysteries remain; that the ordinary waking perception of space, time, matter, and energy is the only scientifically (and medically) correct reality; and that all people are entirely separate from each other and the rest of the universe. In the 20th century, some of these beliefs have been re-examined in the light of new discoveries in physics. Nobel Prize-winning physicists found that a subatomic particle could be in many different places at the same time. It was shown that photons are either a particle or a wave depending on the observer, and both when we are not looking. Reality became the result of a collapsing probability wave of countless possibilities, and fuzzy at the best of times. At the very heart of everything, there sometimes appeared to be nothing at all. When a photon changed in one place and time, its "linked photon" changed simultaneously, even if it happened to be on the other side of the universe, or in a different time. The lives of correlated photons were "magically" linked as if there was no space between them at all, and they were just as tightly linked across time in a synchronized dance. This meant that physical and temporal boundaries, in these realms, must be arbitrary. Many other discoveries were made in the 20th century showing that the Newtonian laws of time and space did not always apply after all, and that there were other laws than these. Out of the most sophisticated

laboratories came a form of support for one of the oldest beliefs, the "oneness of being."[56, 632]

There are several ways to explain the finding that each of a pair of photons emitted by an atom knows immediately what the other one is doing, regardless of the distance and time between them. A messy explanation is that of tachyons, faster-than-light particles carrying messages between the photons. More attractive for our present purposes is Bell's theorem,[29] which involves a hyperspace where all realities exist at a single point, so no messages are required. As well as there being nothing at the heart of existence, there is then also absolutely everything—the cosmos in a teardrop. If entry can be gained to the quantum sea, a person's awareness—the "disembodied eye"—might travel through different "realities" without the body itself leaving the bed.

Timeless, spaceless zones where alternative universes roll off the assembly line is the language of both ketamine experiences and some branches of quantum and astro physics. Scientists looking into the deeper nature of matter and energy can then appear to arrive in the same place as people who may be said to have "retuned their brains to quantum frequencies" through dreams, meditation, revelation, or chemistry. All of these groups may describe the breakdown of matter into rippling waves and dancing or vibrating strings and particles, and eventually into the Void. Scientists often prefer to watch, measure, and legislate from a distance, while others may choose to dive in and seek direct personal experience (and some do both)—but it is possible that the heart of the issue is the same: the finding that we live in a participatory universe (a key proposition of both quantum mechanics and the perennial philosophy) and that everything really is, in some way, connected to everything else.

> (25 mg of 2C-B orally, followed in 90 minutes with 100 mg ketamine i.m.) …I had stumbled into the blast furnace at the heart of the cosmos, the engine that drives the process of creating manifest reality out of the thoughts of the mind of God…I was seeing…that thought creates manifest form…It was kind of like a cosmic assembly line that was constantly churning out the alternate universes that some physicists theorize about in which every conceivable possibility becomes an actual reality.[594]
>
> **Trey Turner**
> "2C-B plus Ketamine," *Trey's Travelogues* (1996)





Although a person is not a photon, and it is a real quantum leap to go from the subatomic world to human events, it is nevertheless worth considering that to deepen our understanding of ketamine experiences we may need to look again at the vast collection of material that has been dismissed as hallucinations, psychosis, suggestibility, stupidity and fraud, signifying nothing other than malfunction and disorder. "Quantum-based" explanations for certain mental states have started to appear. It may be unwise to immediately dismiss these new theories out of hand, although they are certainly in a very primitive state and easy to misapply. Some of the greatest breakthroughs were opposed by the most famous scientists of the day. As the 19th century became the 20th, the physicist Lord Kelvin, who mistrusted anything that was not tangible, declared, "X-rays are a fraud."

In the case of quantum physics, the opposition came from no less a person than Einstein himself, even though quantum mechanics arose from his own discoveries about the particle/wave split (via his study of the photoelectric effect), and it was for this that he was awarded the Nobel Prize, not for his theories of relativity which were still too controversial. Nevertheless, Einstein hated the idea that there was uncertainty at the core of everything, and famously declared that "God does not play at dice" (to which Bohr replied, "Einstein, stop telling God what to do!"). Einstein described the new ideas in quantum mechanics as "absurd, bizarre, mind-boggling, incredible, beyond belief…"[632] He went even further and said that quantum theory reminded him of "the system of delusions of an exceedingly intelligent paranoiac, concocted of incoherent elements of thought."[150]

On this matter, Einstein was wrong. Despite being unbelievable, the "system of delusions" was as accurate at predicting experimental results for the very small as the theory of relativity was accurate in predicting results for the very large and the very fast (approaching the speed of light). In other words, it worked. It became the basis for modern computers, lasers, and aspects of molecular biology, amongst other highly practical applications. Many further Nobel prizes were awarded for experimental results that were indeed absurd, bizarre, mind-boggling, incredible, and beyond belief. Subatomic particles did actually behave as if time and space, and the laws of cause and effect, did not exist.

The next step was the observation that there are many similarities between quantum processes and human thought, leading some well-respected physicists to suggest that consciousness may involve quantum events:

> We may well now ask whether the close analogy between quantum processes and our inner experiences and thought processes is a coincidence … the remarkable point-by-point analogy between thought processes and quantum processes would suggest that a hypothesis relating these two may well turn out to be fruitful. If such a hypothesis could ever be verified it would explain a great many features of our thinking…[39]
>
> **David Bohm**
> *Quantum Theory* (1951)

Some physicists have gone so far as to argue that consciousness plays a role in the entire fabric of the universe, including living and non-living matter, and is not simply a product of the brain.[632] This may be a point where science meets spirit, as this hypothesis is similar to the perennial philosophy, some of the conclusions from psychedelic drug research, and spiritual ideas such as Benedict Spinoza's concept that "God is in everything" (the immanent God). Spinoza believed that mind and matter are two modes of an infinite material called





"God" or "Nature," in which good and evil are relative. In his 1677 work *Ethics*, he said, "We feel and know that we are eternal."

Stephen Hawking occupies Newton's former chair at the University of Cambridge. He has helped to popularize theories about the beginnings of the universe,[130] the belief that the universe has no boundaries in space or time, and that it has some "extra dimensions" and may be made up of super-strings. Hawking also tells us that the universe began with the explosion of a virtual particle of infinite mass, and that 99% of the universe is unknowable "dark matter" anyway,[205] language which makes perennial and psychedelic philosophy seem less esoteric. The Catholic Church has learned from its past mistakes with Galileo and others, and moved with the times. The Pope thus entertained Hawking at the Vatican and made it clear that while the first creative act, the "spark" for the Big Bang (*i.e.* the first "division") was the province of God, he was prepared not to condemn the findings of science concerning subsequent events.[205]

The quantum perspective has now been taken out of specialist journals and launched into the public arena. Respected scientists have written popular books and articles explaining the new physics in a way that, according to some observers, may eventually require a serious reappraisal of consciousness, "reality," and certain types of altered states of being.[29, 39–41, 56, 103, 186, 214, 384, 469, 616, 619, 632]

It is hard to dismiss scientists of this caliber as a lunatic fringe. As what you are currently reading is not a book about the new physics, those who wish to see a more detailed discussion should look within the books cited. Several of these deal specifically with theories of how consciousness may arise from quantum events, for example Oxford professor Roger Penrose's 1994 book *Shadows of the Mind,* and Oxford physicist Danah Zohar's 1991 book *The Quantum Self* (which is free of equations). Penrose proposed that cell microtubules, small hollow cylinders that help cells to keep their shape, can hold information as "quantum waves." However, these tubules do not provide sufficient isolation from surrounding electrical forces for a quantum wave to remain coherent for long enough.[583] Nevertheless, the failure of the

microtubule idea does not mean that "the brain is classical," as argued by astrophysicist Max Tegmark. Tegmark's paper brings to mind the mathematical proof that flying machines were impossible, but his emphasis on the need for "isolation" for quantum events to occur is a useful clue on which to build a new theory of the quantum mind, as of course "isolation" of the brain is just what ketamine, flotation tanks, and dreaming have in common.

Robert Jahn is a Professor and Dean Emeritus at Princeton University. His 1986 paper "On the Quantum Mechanics of Consciousness, With Application to Anomalous Phenomena," and his 1987 book *Margins of Reality: The Role of Consciousness in the Physical World* are also of interest.[236–7]

There have been more direct links between the world of quantum physics and that of dissociative mental experiences. For example Richard Feynman, a Nobel Prize-winning physicist highly placed amongst the post-war pack, went through 12 weeks of "tank trips"out at Lilly's ranch in the 1970s, during the period when Lilly was using large quantities of Vitamin K:

> During that twelve weeks, Dr. Feynman made progress. He sent me a copy of his book, *Feynman on Physics* after the twelve weeks and he said, "To John Lilly with thanks for the hallucinations, Dick Feynman."[364]

### Strings, Branes, Super-symmetry, "*Matrix*, *Mystery* and *Magic*"

String theory is currently prominent in physics. It suggests that the smallest and indivisible components of this universe are not particles but tiny vibrating loops or "strings." These strings have vibrations in extra dimensions that balance the vibrations in the known dimensions: positive and negative energies canceling each other to produce the universe as we know it in a "new" kind of symmetry called "super symmetry."[186] The latest atom smasher in Geneva, built at great expense, may provide evidence of this super symmetry. From one perspective, this technological colossus can be seen as an attempt to produce the world's most expensive yin-yang symbol to date. The scientist whom many currently associate most strongly with attempts to unite the various string theories is Edward Witten, based at Einstein's alma mater, the Institute for Advanced Study, in California. Witten's theory about the fabric of the universe is called "M theory." In a *TIME Magazine* article about Einstein, the "person of the century," Witten was described as "perhaps the most brilliant theorist working in physics today," and this brilliant physicist declared that the "M" in his theory stood for many things, "including *matrix*, *mystery* and *magic*" (italics as in the original text).[436] Again we see the language of the new physics becoming ever more mystical, ineffable, and similar to the perennial (and psychedelic) philosophy.





While the language used to describe profound LSD experiences is sometimes similar to the language of the "older" quantum physics, featuring "white light and dancing particles," some of the more recent reports in physics journals use similar terms to those describing profound ketamine experiences. Super-string theory has been added to by the proposed existence of entire groups of extended objects called p-branes, which are types of membranes. A string is called a one-brane as it has length but no other dimension, while a membrane is called a 2-brane as it has two dimensions. Other types of "branes" have higher dimensions (11 dimensions in the leading scheme).[186] The perception that one has actually become an "across-the-universe" membrane or fabric is a known ketamine effect. This concept was captured in an interesting way in the film *Contact*, when Jodie Foster's character has a machine-induced NDE.[514] Before p-brane theory became popular, Lilly wrote:

> At the highest level of satori from which people return, the point of consciousness becomes a surface or a solid which extends throughout the whole known universe. This used to be called fusion with the Universal Mind or God. In more modern terms you have done a mathematical transformation

> in which your center of consciousness has ceased to be a traveling point and has become a surface or solid of consciousness…It was in this state that I experienced "myself" as melded and intertwined with hundreds of billions of other beings in a thin sheet of consciousness that was distributed around the galaxy. A "membrane."[364]

### The Battle for the Mind

With some exceptions, the reality-shaking findings of quantum physics have yet to be fully absorbed into the theories that drive neuroscience, psychology, and psychiatry. It has largely been left to the physicists to write about the implications of their discoveries for our understanding of the mind. This is despite the observation that in modern times, the "battle for the mind and the nature of reality," and the setting of limits for the social consensus reality, often take place in the mental health arena in addition to instructions from the more traditional areas of religion and politics. In the 20th century, some types of "dissenters" have been described as mad rather than bad, or possibly both where psychedelic drug use is involved (*e.g.* Freedman's discussion of Leary in *Archives of General Psychiatry*, 1968).[157] Some psychiatrists would agree with Einstein's view that the language of quantum physics resembles some of the language that has been labeled as psychotic, and use the word "psychotic" to describe the very similar language, metaphors and insights produced by the psychedelic drugs. These drugs were widely suppressed as research tools in the late 1960s, with some psychiatrists adding their authority to that of politicians to achieve this, thereby partially taking over another role long held by religious officials.[134]

While there were many reasons for attempting to confine psychedelic drug research to "house arrest," it is interesting to note that suppression of research is historically linked with an impending, major shift in the core belief system.[342] In such cases the suppression is rarely successful for long. The United States government has recently approved further human research with DMT, LSD, and psilocybin, after a 20-year moratorium. There are other signs that the house arrest on this type of research is starting to ease slightly.[573–7, 392] Rather than the Catholic Church, it is now more often those engaged in psychology and psychiatry who are failing to integrate modern physics into their own disciplines. Some would argue that there is nothing to integrate, that there are no data requiring a quantum understanding. To hold this view we must label as hallucinations, psychosis, suggestibility, stupidity and fraud a disturbingly wide range of human experience. What we know about the history of scientific revolutions, particularly the terms used in the past to resist such revolutions, should make us wary when the amount of material to be squashed into the waste disposal grows to an unwieldy size.[342]

Quantum physics cannot be confined to house arrest, but it can be actively ignored. However, the hope that it will simply go away and not complicate psychology and psychiatry (or medicine as a whole) may yet prove to be as in vain as the hope that Galileo's findings could be denied by confining him to his house, or that the issues raised by psychedelic drug studies would go away by preventing further research and sentencing Leary to 30 years in prison.





### Transpersonal Psychology and Psychiatry

One of the remarkable features of these debates about the innermost nature of the mind is that they have often been between astrophysicists, such as Penrose and Tegmark. With a few notable exceptions, mental health professionals and neuroscientists contributed little to these discussions in the 20th century, although there is an area related to mental health medicine that does take quantum physics into account. This is sometimes called "transpersonal psychology." A founder of this approach was psychiatrist Carl Jung, who postulated the existence of a "collective unconscious."[295] This is defined as a deeper part of the psyche shared between people of the same culture. Jung clearly stated his belief that "part of the human Self or Soul is not

subject to the laws of space and time."[227] (See also: Mansfield & Spiegelman, "Quantum Mechanics and Jungian Psychology: Building A Bridge," 1989.)[384]

Grof has also played a key role in the development of this area. This psychiatrist suggested that death/rebirth experiences can allow the "expansion of consciousness" into parts of the psyche that appear to transcend personal biography, time, space, the limitations of the body, and Newtonian physical laws.[198] For example, there may be a perception of access to the moment of conception, embryonal and fetal experience, the collective unconscious, and ancestral and racial experiences. In this scheme, the ultimate transcendence is said to be a release into formless consciousness, without subject or object (nirvikalpa samadhi).[294] Grof's key distinction is between ordinary waking consciousness and "nonordinary" states of consciousness that "mediate access to all other aspects of existence."[198] Ketamine may be one of the substances that "re-tunes" the brain to allow awareness to enter "the quantum sea." The theory suggests that we consider reports of personal experiences of "eternity," "infinity," and multiple universes in a new light. Perhaps we should not immediately reject such an "impossible" theory after a century of the "impossible" being published in the best physics journals.

## A Peek Behind the Curtain

> People think that if you just say the word "hallucinations" it explains everything you want it to explain and eventually whatever it is you can't understand will just go away. It's just a word, it doesn't explain anything…[5]
>
> **Douglas Adams**
> *The Hitchhiker's Guide To The Galaxy* (1992)

We will now consider Grof's maps of the speculative transpersonal states, as material from all of these categories has been reported by





individuals who have taken ketamine. Some of his more lengthy and detailed examples are from ketamine journeys.[198] Unlike Grof, I have used the word "awareness" in preference to "consciousness" (see Chapter 4).

The first zone is the apparent extension of awareness within ordinary reality, and ordinary space and time. This includes apparent transcendence of normal spatial boundaries, which may involve a sense of merging with another person, of actually becoming another person, or of becoming an entire group who share some characteristic. There may be a sense of becoming an animal or plant, all of life and creation, inanimate matter, the entire planet and beyond into identification with the entire physical universe, sometimes described as "infinite awareness and knowledge."

Apparent transcendence of spatial boundaries includes out-of-body experiences, apparent telepathy, and reports of seeing things not in range of the eyes, and hearing things not in range of the ears. Apparent transcendence of time can include ancestral and racial experiences (including Jung's collective unconscious), and reports of "past lives." It also involves apparent identification with animals across time, experiences of planetary and cosmic evolution, and appearing to see events in the future or the past:

> Often I felt that I had pre-cognitive flashes and on several occasions events briefly glimpsed on K did come to transpire in ordinary reality… On one particularly eerie session I had correctly intuited that the room I was in had been the site of someone's death and also was aware of the manner of his death. Later on I mentioned my presentiments to the owner. He corroborated my story and was impressed that I could have known what I did. I realize that few would entertain the truth of such an incredible tale, but for me it remains a convincing instance of the reality of these states.
>
> **K.U.**

Instead of an expansion of awareness beyond the limits of the body, awareness may appear to travel into the organs, tissues, cells and DNA.

The second major category is the apparent extension of awareness beyond consensus reality and space-time. This includes experiences of alternative universes and their inhabitants, Gods and Goddesses, symbols, spirit guides, the dead, energy fields, animal spirits, angels, mythological beings, fairytales, science fiction, and an ultimate merging with the "universal mind," the "ultimate reality" underlying all other realities, from which the "illusions" of time, space and matter appear to be derived.

Experiences of Jung's universal archetypes fall into this group.[293, 295] Archetypes are transpersonal patterns and blueprints. These may involve roles such as Man, Woman, Father, Mother, and Child. These roles can be further defined, such as the Wise Old Man and Woman, Lover, Trickster, Hero, Martyr and others. In the Jungian system, a symbol is the best possible representation of something from another level of being that cannot easily be expressed in any other way. Major symbols include the cross and the yin-yang. An experience of a universal symbol while in an altered state of being can result in a deeper understanding of the meaning of that symbol and a new interest in spiritual ideas.[293]

The third major category includes events in the mind that appear to be connected with physical changes in the external, ordinary reality ("magic"). Synchronicities involve apparently meaningful coincidences between events such as dreams, visions, and drug experiences and actual physical events.[296] As an example Grof gives the apparent accumulation of dangerous accidents in the lives of persons who have come to the point of ego-death in their inner journey. Those using large amounts of ketamine may be undergoing a form of ego-death frequently. A few of these people do sometimes appear to attract actual near-death situations or death itself into their lives. The most well-known examples are the deaths of Ariel, Enright, Moore, Turner, and Lilly's near-misses. However, it seems more likely that these events are simply due to the effects of the drug itself taken in a dangerous





context, rather than being due to a form of "magic" or transpersonal phenomena. Sceptics describe synchronicity theory as "Koestler's fallacy," and argue that such coincidences are easily explained by the ordinary laws of probability.[388]

Lilly experienced so much apparent synchronicity, due to spending prolonged periods halfway between ketamine realties and this world, that he came to believe in "levels of coincidence control." There have been other reports of the way in which ketamine binges can result in apparent entry to a "magic spell," in which there appear to be many synchronous events occurring for several days, oriented towards an outcome that may have spiritual significance for the person, of either a positive or a negative nature. Persons suffering from schizophrenia also see significance and messages in commonplace events. However, the links made in schizophrenia are often not sensible or understandable by ordinary people, in contrast to synchronicities, which are more likely to "make sense."

## Health and the Quantum Perspective

> The existence and nature of transpersonal experiences violates some of the most basic assumptions of mechanistic science…The transpersonal phenomena reveal connections between the individual and the cosmos which are at present beyond comprehension…This is not just a matter of academic interest; it has deep and revolutionary implications for the understanding of psychopathology and offers new therapeutic possibilities undreamed of by traditional psychiatry.[198]
>
> **Stanislav Grof**, M.D.
> *The Adventure of Self-Discovery* (1988)

Most of modern medicine is still based upon the machine model of Newton, with a reluctant nod to complimentary medicine forced upon it by the latter's popularity with patients. This Newtonian emphasis is

successful at producing new treatments, but is sometimes felt to exclude material that might invest life and humanity with a greater sense of meaning. However, there is increasing acceptance amongst the general public of holistic, "meaning-enhancing" approaches to health. This is not surprising as beliefs in the oneness of being are ancient and fundamental. Public acceptance of the approach of Harvard graduate Andrew Weil, M.D., is an interesting example. He is author of *The Natural Mind: A New Way of Looking at Drugs and the Higher Consciousness*[613] in which it was argued that many humans have a drive to transcend the social consensus reality. He also published early accounts of the effects of the "love drug" MDA (a relative of the now better known MDMA), studies of psychedelic mushrooms, and a book called *The Marriage of the Sun and Moon: A Quest for Unity in Consciousness*.

Weil's fate has been very different from that of Leary. In April 1997, he found himself the people's choice for "Doctor to America" and on the front cover of *TIME Magazine*, having sold millions of copies of two books called *Spontaneous Healing* and *Eight Weeks to Optimum Health*.[614] He was listed by *TIME* as one of the most influential people in the United States. In *Eight Weeks to Optimum Health*, Weil expressed the view that breathing was representative of the movement of spirit within matter, and that paying attention to breathing put people in touch with their "vital, nonphysical essence" and connected them to the universe. He recommended a Buddhist meditation prayer on loving-kindness that stressed connectivity with all others in ever-widening circles, extending from the self to the universe.[614] This goes beyond the Lord's prayer request to "forgive us our trespasses and forgive those who trespass against us." One of the most influential doctors in America also stated that health involved body, mind, and spirit, the latter being defined as the nonphysical aspect of being, and expressed his disquiet at the manner in which much of American psychiatry (which means "soul doctoring" if we trace the word to its roots) had—in his opinion—become a branch of applied neurochemistry. He still found time to speak at a conference in August, 1997.





The title of that meeting was *The Psychedelic Vision at the Turn of the Millennium*.[385]

Physics has often been the wellspring for theories in other disciplines. The supposedly "immutable laws" of Marx, Darwin, and Freud are partly traceable to Newton's "immutable" clockwork outlook, and later Einstein's theory of relativity had a profound effect on many areas of modern culture, including painting and literature. That physics acts as such a wellspring for theories in other areas suggests that we may yet develop some form of "quantum psychiatry." Freud's Newtonian psychiatry, which dealt with psychic energy as if it were a head of steam in the mind, appeared over 200 years after Newton published his *Principia*, but the pace of change is now much faster. History suggests that the new physics will impact upon the theoretical basis of mental health science eventually. We may then develop a more sophisticated approach to that certain class of "dreams, nightmares, and hallucinations" accessed by ketamine.

The ideas of some psychologists who have attempted to find meaning in psychedelic experience are considered below.

### *The Varieties of Psychedelic Experience*

This was the title of a book published in 1967 by Jungian analysts Robert E.L. Masters and Jean Houston, based on studies of hundreds of people whom they "guided" through LSD experiences.[393] Their model of the deep self, derived from these studies, involves four layers. The first is the sensory realm, a storehouse of images. Below this is the recollective-analytic level of personal biography. Next is the symbolic dimension, containing Jungian archetypes[293] and symbols with historical, legendary, mythical, or ritualistic meanings. The person at this level experiences a deep sense of being part of evolutionary and historical processes, and may take part in myths, legends, initiations, and rituals that appear to be consistent with their psychic needs. Finally there is the integral level, described as a meeting with the "ground of being," "God," or "fundamental reality." Ketamine has produced

reports consistent with all of these levels.

### NeuroLogic, NeuroPolitics, and NeuroLeary

Timothy Leary was a clinical psychologist whose controversial role in popular culture often obscured the fact that he was invited to Harvard for his pioneering work on personality and the way in which other people define who we are, set out in his doctoral thesis, *The Social Dimensions of Personality* (University of California, 1950), and in the books *The Interpersonal Diagnosis of Personality* and *The Multilevel Assessment of Personality*. Leary continually pointed out that consciousness resided in the "120 billion cell brain" and held the biological capability of the brain in high regard, proposing that circuits in the brain, or "mini-brains" as he called them, were responsible for different realities. He kept track of advances in neuroscience, fascinated by the new methods for imaging thought and emotion. He was not usually "blinded by the Light" into a total disregard for the material form and function of the brain (I say "not usually" because Leary was very changeable in his views, and like Lilly did not believe that there was one single, knowable truth.) Facing the final curtain, Leary did not appear to believe that his ego, despite its great size and durability, would survive the death of his body.[354] Although half of his model is rather strange, serious strangeness is also at the core of the new physics, which uses metaphors that are very far out indeed (including terms such as "strangeness quarks" and "strange-lets").[616]

The core of Leary's philosophy and phrases may be summarized as: "You are the owner and operator of your own brain. Free yourself from imprints and robot behavior. Take control of yourself. Question authority, including me."[351] His notoriety was related to the further advice that LSD was an effective way to achieve this suspension of imprints. He was always very optimistic, describing himself as a "hope fiend," and failed to foresee that some people would take LSD without adequate safeguards, some would come to harm in other ways, and that many had no desire to free themselves from their imprints.





The model itself is called "neurologic."[351] It divides the brain into 8 circuits or networks, 4 in the left hemisphere and 4 in the right. The left side is oriented more towards logic, speech, mathematics, and verbal memory. The right is more often involved in intuition, music, art, pattern and facial recognition, and a holistic understanding. Once again, the quantum principle of complementarity is reflected in biology. A thick bridge of fibers in the middle connects the two sides of the brain, and these fibers use glutamate as their messenger molecule.

The phrase "according to Timothy Leary" should be assumed to exist before nearly all of the following statements.

In the neurologic system, the left circuits were said to be concerned with terrestrial survival while the right circuits were for "post-terrestrial" existence, to be used in our future evolution. It was the right brain circuits that were said to be activated by psychedelic drugs. Each circuit imposed its own perspective on whatever filtered through to it, and was imprinted by the first experiences to arrive. As in the perennial philosophy, the ultimate source of everything was "Mind-at-Large," equivalent to Moore's "cosmatrix"[423] and the core Brahma energy of the Hindus.[295] The first 4 circuits (left brain) were said to be:

1. The Biosurvival Circuit: The first to evolve in the ancient seas, billions of years ago. This is the first to be activated at birth. This circuit divides the world into things to approach (nurture, food, help) and things to avoid or attack (noxious, harmful things). The circuit sees the world in terms of life/death, trust/suspicion, anxiety/security. Which stimuli will produce such feelings as trust later in life will depend on lasting imprints laid down in the newborn as a result of its interactions with the setting. The first circuit involves "being here now" awareness in the body (being alive in the corporeal realm) and is the source of the will.

2. The Emotional Circuit: A more advanced system emerging with the vertebrate competition for territory. This circuit becomes imprinted as a toddler learns to walk, and becomes involved in the family and its decisions. Imprints are laid down determining the type of stimuli automatically triggering strong/dominant or weak/submissive behavior

later in life. The ego is formed, related to a sense of importance or unimportance (status) in the family or tribe.

3. The Dexterity-Symbolism Circuit: This evolved with the use of tools and speech, and is activated when the child begins to speak. This is what is generally meant by "mind:" the receipt, integration and transmission of signals produced by the hand (artifacts) or speech.

In evolutionary terms, the first brain "consciousness" is that of a simple primitive life form floating towards food and away from danger. The second brain "ego" is that of a mammal, striving to achieve status in the tribe hierarchy. The third brain "mind" is human, formed to deal with human culture including tools and symbols.

4. The Socio-Sexual Circuit: This formed with the appearance of society and sex-roles. It is activated at puberty and generates adult personality. This circuit is imprinted by early orgasmic experience.

These 4 circuits are normally the only ones active. They are based on biochemical imprints, and are said to be activated by "terrestrial" drugs such as opium, alcohol, and cocaine, none of which were said to be able to change the basic imprints. The history of life on Earth is contained in each brain, which is like an old city, built up in layers over different historical periods.

It is the right brain circuits that mark the real departure from "common sense." Their existence was proposed as an explanation for altered states of being which seemed to have little relevance to basic survival issues. The question was (and still is), why are we capable of these states? What is their evolutionary value? Why can they be pleasurable? Some of the answers may lie in pre-birth issues, a possibility that neurologic did not consider. Leary's suggestion was radically different. He proposed that these states are generated by brain circuits that will be used in our future evolution, and the biological mutation required for these future developments has already occurred. This is like buying a huge, ultra-fast computer just to write a few letters, because next year you'll be looking for the ultimate value of pi. Even "explained" in this way, the theory requires a similar leap of faith to that required by physicists who speak of strangeness particles, virtual





time and the 11 dimensions in which super-strings vibrate.

5. The Neurosomatic Circuit: Switching on the fifth circuit was said to result in a shift from linear visual space to an all-embracing sensory space associated with hedonistic, physical rapture, amusement, and freedom from the compulsive "Pavlovian-Skinnerian robotism" of the first 4 circuits. The fifth circuit was said to be about 5000 years old, appearing with the first leisure classes and hedonic art. Opening and imprinting the fifth circuit has been a goal of tantric and hatha yoga, but can also be achieved with *Cannabis*, discovered about 5000 years ago in the Caspian sea area of Asia. (In fact, the first record of human *Cannabis* use comes from the island of Taiwan and is over 10,000 years old.[65]) *Cannabis* was described as the "fifth brain neurotransmitter." This 1970s idea seems less peculiar since the discovery of specific cannabinoid receptors in the brain in the 1990s, and the discovery of anandamide, the brain's own messenger for these receptors.[566] Cannabinoid receptors are dense in the higher brain, work closely with N-P receptors, and are proving to be very important.[472]

The fifth circuit was described as the first "extra-terrestrial" circuit because its activation led people to say that they were "high." Activation could result in experiences of apparently transcending Newtonian gravity, a state of floating. Astronauts who were physically "high" in zero gravity had described being psychologically "high" as a result, with mystical experiences and raptures. The astronaut Captain Mitchell said that no photograph could show how beautiful Earth looked, and he left off being an astronaut to found The Institute of Noetic Sciences, with a transpersonal orientation, in which astronaut Buzz Aldrin also took part. "Noetic" means "ultimate knowledge."

The astronauts may have been primed for such experiences. NASA psychologist Dr. Steve Groff (1965) is reported to have said that many astronauts were given LSD by NASA, to prepare them for weightlessness and the disorientation due to the lack of external co-ordinates from which to take their bearings.[221] NASA was also said to have used a "top-secret" space drug for astronaut training. This was referred to as JB-118 in one publication,[221] but may have actually been JB-318, or

N-ethyl-3-piperidyl benzilate hydrochloride,[598] a compound produced by Lakeside, and very closely related in structure to Ditran. One might compare ketamine to this drug, as it was was said to have short-acting effects, cause out-of-body experiences, and produce hallucinations more "real" than LSD.[221]

Thus the fifth brain development was said, by Leary, to be a mutation in preparation for migration into space, just as the other circuits had developed for life in the sea, the transition to land, the use of tools and speech, and the formation of societies.

Ketamine experiences may involve reports of floating in the air or space, and these states may be described as ecstatic. The word "ecstasy" is derived from the Greek *ekstasis*, which in the post-classical sense can be interpreted to mean "out-of-the-body." Seen from this perspective, "ecstasy" is a better name for ketamine than for MDMA, considering the effects of the two drugs. An awareness of being out of the body has often been felt as rapture, even in simple flying dreams. The perception of having overcome gravity in this way, even when the body itself is firmly located upon the bed, has a major psychic reward linked to it. The explanation that this is because a feeling of weightlessness recreates floating in amniotic fluid, and the bliss of the womb (what Grof calls "oceanic ecstasy"[198]) may be partly correct but does not seem entirely adequate. While swimming and baths may be pleasurable, they are rarely described as ecstatic. The proposal that apparently floating in mid-air is euphoric because it means that our minds can overcome physical laws and hence our bodies (implying that our consciousness will live forever even if our bodies do not), also has clear limitations. Reserved seats are now being sold on a tourist space shuttle at a high cost for a short trip. We can test the prediction that floating weightless in space will be an addictive pleasure for some members of the third millennium's hedonic classes.

6. The Neuroelectric Circuit: This was said to be consciousness becoming aware of itself, the meta-programming level; awareness of programming one's programming; gaining the understanding that the Newtonian reality may be but one option amongst countless possible





realities. When this circuit is activated, it is possible to make a conscious choice about whether or not to share another person's reality. The level attained is described in terms such as "not self," "no mind," and "the white light of the void," because the usual imprints that constitute the mind have been suspended. This led to another of Leary's sayings, "it becomes necessary for us to go out of our minds in order to use our heads."

Ketamine and the LSD-like drugs were said to switch on this circuit: "tripping" rather than "getting high." Rajah Yoga also switches on the 6th circuit. The function of the mutation in our future evolution was said to be so that communication could take place via:

> Neuroelectric accelerations…directly via feedback, telepathy and computer link-up. Neuro-electric signals will increasingly replace "speech" (hominid grunts)…making possible communication with "Higher Intelligences"…reality-brokering with species above us in evolution, i.e. the more advanced intelligences of the galaxy…using electronic (post-verbal) reality maps.[351]

This was written by Leary in Vacaville Prison in 1974, to be included in his 1977 book *Neuropolitics*. The psychologist had been given a 30-year prison sentence for possession of a very small quantity of *Cannabis*. He spent 7 years in prison, and was described by Richard Nixon as "the most dangerous man alive."

The neuroelectric aspect refers to brain function taking place in the absence of imprints, a state that Leary thought to be attainable through psychedelic drugs, meditation, and isolation tanks. Some mothers believe that they have a beyond-words interchange with their newborn babies, who may be free of language and acquired imprints other than that of birth itself.

Leary predicted the importance of the Internet decades before it became so, and started a software company called KnoWare (from his phrase "Just Say Know"). The world wide web does allow us to surf

from one "reality" to another at high speed in the sense that each minute we can expose ourselves to a different set of beliefs: a different religion, political party, group of suicidal comet chasers, *etc*. After surfing widely on the web, the social consensus reality can begin to look frayed around the edges, and the concept of reality brokering in an imprint-free market place may appear slightly less bizarre. In late 1998, official bodies set up a web site for any alien probes seeking to make contact, as it was recognized that "electrical" messages could be the chosen means of communication.

7. The Neurogenetic Circuit: Leary wrote that this is activated when awareness "receives messages from the DNA" resulting in experiences of apparent evolutionary history, "past lives," reincarnation and immortality. Recent work suggests that the 98% of our DNA once thought to be unnecessary "junk" may not, in fact, be junk after all. It has been suggested that this "junk" may contain some of Jung's "collective unconscious," and much else besides. The study of "junk" DNA may play a role in future research into altered states of being,[276] as our study of gene activation by drugs becomes more sophisticated. We already know that psychedelic doses of ketamine can induce DNA to produce the c-Fos protein, amongst others, and that "knock-out" doses do not.[432–3] We are just taking the first steps down what may be a very interesting road, exploring the role of gene activation in producing memory and mental states.[119] LSD, DMT, and ketamine were said to activate circuit 7. The evolutionary function of this circuit was described as preparation for discovering the "immortality of consciousness" and the possibility of "interspecies symbiosis."[351]

8. The Neuro-Atomic Circuit: A communication system operating at the quantum level. When activated, the limitations of time and space disappear, Einstein's speed-of-light barrier is broken, "the greatest is within the smallest" (Lao-Tse) and awareness apparently travels through "the beyond within." Out-of-body trips and contact with other entities and what Leary called the "Over-Mind" (God) were said to become possible. Like Lilly, Leary believed that extra-terrestrial beings were far more likely to contact us through inner rather than





outer space, on the basis that awareness can enter the inner quantum realm where the speed of light is transcended and non-local connections become possible.

Some science fiction writers, such as the respected astronomer Carl Sagan, have explored this concept of inner travel rather than the classical spaceship with a "hyperspace drive" or, more recently, a quantum-style "improbability drive" as in *The Hitchhiker's Guide to the Galaxy*. Nevertheless, the *Guide* does draw inspiration from quantum-psychedelic philosophy in volume 4, concerning the mystery of the disappearing dolphins and the John Lilly styled character "Wonko the Sane," the only person who knew where they went. We are told that the editor of the *Guide* "tends to get his nightmares through a straw," but not which orifice the straw is placed in.[5]

This concept of "inner space travel" rather than "outer space travel" was the central theme of actress Jodie Foster's character's trip in the film *Contact*, based on a 1985 book by Sagan.[514] A very large machine is built, following instructions apparently sent by radio waves from an alien civilization near the Vega star system. It is anticipated that this machine will act as a *Star Trek* style matter transporter. However, the machine actually transports the occupant mentally rather than physically, in scenes resembling a NDE or ketamine experience. None of the observers will believe her account of actually going somewhere, as her body didn't leave the machine and she was only in it for a few seconds while the reported trip lasted for 18 hours. The government seeks to undermine her credibility, keeping secret the fact that a helmet video camera recorded not only static (of which the world was informed) but that there were 18 hours of static. At the present time, we do not have the equivalent of this 18 hours of static, and these ideas remain science fiction rather than science fact. Sagan died in 1996. Following his death, the fact that Sagan had used *Cannabis* extensively and LSD occasionally, and attributed important insights to the use of these drugs, became more widely known.[102]

The suggestion that the mind could receive messages from "higher intelligence" if tuned in the right way has an ancient history in both

Eastern and Western cultures, but "receiving messages" is also a feature of serious mental illness with demonstrable brain damage on scanning. Parts of the *Bible* and other holy books are clearly identified as a message from "higher intelligence," sometimes "directly transmitted" into the chosen vessel. These messages were apparently easier to receive when the saint had "re-tuned the brain" through fasting in sensory isolation, chanting, meditation, or other means. While it can be argued that the *Bible* is the product of humans alone, that St. Thomas was an epileptic, Jesus suffered from schizophrenia, and so on, nevertheless this book is believed, and some of its teachings are followed, by millions of relatively sane people, who may attempt to communicate with higher intelligence by means of prayer. These people also often believe that their consciousness will survive their physical death, and they may believe in versions of heaven and hell. It seems that some of the key ideas of transpersonal psychology are held to be true by much of the global populace, and that some of these theories are not the radical departure from orthodoxy that first appearances might suggest. Anyone who believes in any form of God has thereby accepted that some transpersonal phenomena are possible, and that Newton's laws do not apply in every realm. Opinion polls indicate that at least 95% of Americans hold some form of transpersonal belief.[166] About 900 million Hindus believe in reincarnation and the transmigration of souls on a routine basis, including Hindu psychiatrists and physicists. Nevertheless, it can be argued that transpersonal psychology is still a radical departure, despite transpersonal beliefs being commonplace, because it sometimes presents these ancient beliefs as objective and "proven" science rather than subjective religion. This was a criticism sometimes made of Jung's work. Those interested in exploring such debates further are referred to the extensive literature dealing with Jungian psychiatry. What Jung described as his personal "night sea journey" would have many contemporary psychiatrists reaching for their prescription pads.

Leary eventually emerged from prison and experimented with ketamine. In the 1990 edition of his autobiography *Flashbacks*, he noted





that while LSD was usually a 7th circuit drug, ketamine was the "neurotransmitter" of the 8th, neuroatomic circuit. *Neurologic* proposed that some drugs would take the person "further up and further in" than others, and the drugs said to take the user furthest in the final, 1997 version were ketamine and salvinorin A.[354]

There are many immediate and obvious problems with Leary's 8-circuit model. An in-depth discussion of these is beyond the scope of this book, but it should at least be noted that most drugs would affect several of the circuits above (if they actually exist). For example, the "terrestrial" alcohol can produce apparently transpersonal experiences on occasion. Some people with alcohol dependence stop drinking after an experience of delirium tremens in which, in one form or another, they report that God told them to stop drinking. Circuits 6 and 7 also appear to involve "quantum events," not just circuit 8, and the distinctions between these levels seem very artificial. The "choose-your-own reality zone" may be a form of Bell's hyperspace, in which awareness appears to jump from one universe to another. This was the domain that Lilly called "Alternity," where all choices are apparently possible.

### The "Soul Field"

The issues of soul and spirit loom large in the reports of people who have experienced ketamine, even those who are atheists. Our discussion would be incomplete without trying to understand these terms further, and their relevance to ketamine experiences.

For most of human history, the cosmos has been seen as a living being in which everything has a soul: mother Earth, father Sky, the planets, the stars—all were seen as inter-related and alive. The followers of Plato wrote of the *anima mundi*, the soul of the world, and Aristotle described the human soul as being in touch with that of plants, animals, and the universe. He also spoke of the soul as the doorway into transpersonal realms. Soul was considered to be in everything and through everything. Some medieval philosophers and religious

figures saw the body as being in the soul, a field extending beyond the body, possibly for an infinite distance.[537] This is quite different from the belief that the soul is trapped within the body like a bird in a cage, to be freed at death.[537] It was not until 1619 that René Descartes declared the soul to be locked into a bony pea within the brain called the pineal gland. He declared that the rest of the human was a robot and that animals were definitely no more than robots, and did not have souls. Humans stood apart from Nature, which was there to be conquered and subdued.

Descartes' ideas were enormously influential. His instruction to "dominate nature" is still sometimes seen as one of the root causes of the subsequent destruction of parts of the physical, now soulless Earth, as the only species alleged to have a soul—the Cartesian uber-species—damaged the planet for the gratification of individual human egos. If this damage continues at its present pace, Descartes' famous statement "I think therefore I am" may finally result in "I think therefore I am not."

The Cartesian thesis was soon followed by Newton's clockwork astronomy. However, a quiet counter-revolution began in the Victorian era when Michael Faraday started to talk about invisible magnetic and electrical fields, and to present theories unifying the two. The ancient Greeks had said that magnets had a soul, extending outwards from the magnet itself as souls were then thought to do. There was some common ground between Faraday's "field" and the "soul" of the Greek magnet. As Sheldrake and others have pointed out, it could be said that the ancient idea of a soul extending beyond the physical object had been re-introduced in the concept of the "field."[537] By the 1920s, Einstein was writing about gravitational fields acting over vast distances. With the arrival of quantum physics, the ancient intuition that we live in a highly connected universe was supported by the linked photon experiments.

The way in which the growth of the universe is described by Hawking is sometimes more consistent with that of a living being than





with a machine. As noted by Sheldrake, Newton's universe involved an inanimate, purposeless machine made up of inert atoms, governed by eternal laws, ultimately knowable, determinate and uncreative in which rotated the dead inanimate Earth.[537] The new physics and the new astronomy were a major departure. In the quantum system of belief, the universe has an origin, growing like a developing organism from a "seminal" event, with phenomena appearing anew like buds in the spring. It is indeterminate, chaotic, and 99% unknowable because of the existence of "dark matter," which Sheldrake links with the idea of the unconscious. There is creative evolution. There are fields connecting the previously unconnectable, knowledge is participatory and depends on the observer rather than being absolute, and the Earth can be seen as a "living organism" itself (sometimes called "Gaia" as suggested by James Lovelock[370]).

As discussed earlier in this chapter, the 20th century saw suggestions that "consciousness" could be seen as a field that plays a role in the core fabric of the universe, and that this field may exist independently of the living brain. In this model, spirit is the consciousness running through everything. The soul is then the part of this spirit that is personalized, one bud on the branch of the collective unconscious. In this model, awareness can both flow from the periphery inwards, into the "universal tree" and towards the source of what is called "cosmic love" and connectedness, or it can flow out towards the tip of the bud, and finally off into nothingness. The Church of England recently declared that hell is "a state of non-being," presumably representing the ultimate disconnection from the "eternal Tree of Life." In this scheme, the soul is a field centered on the individual, and exists within spirit joined to the larger field. In the Hindu system, the chakra energy centers throughout the body extend the domain of "the soul field" to physical regions outside the brain. It is the first two chakras, especially the chakra around the umbilical area (the belly button), which Hindus describe as providing the connection to the "universal energy." The belly button is of course the lasting mark of the birth process, and

Grof stated that death/rebirth could provide access to transpersonal realms. Ketamine users have described all of the states of being discussed above. Such suggestions may appear to be mysticism of doubtful value until we again consider the language and ideas of modern physics. Some of the ideas put forward by mind explorers may then seem less extreme and "unscientific" than they would have 100 years ago.

### Conclusions

Transpersonal experiences may be theoretically possible within some branches of the new physics. At the most fundamental level there may be "probability" rather than an ultimate sub-particle. The old Newtonian idea that everything is ultimately knowable appears to be wrong. From the contemporary "quantum perspective," at the core of the universe, God (+) does appear to play at dice with the Devil (–), giving rise to the +/– pagoda of being. The key issue is the extent to which subatomic events are involved in producing mental states. Can ketamine "re-tune" the brain to allow awareness to enter the "quantum sea?" One day, we may have to regard some of the reports of eternity, infinity, multiple universes, linkage with other beings, and so on, as phenomena demanding a sophisticated explanation rather than an easy dismissal as hallucinations and drug-induced psychosis, requiring no further thought. However, we should also avoid colluding with persons who have a serious mental illness requiring serious treatment, as these "quantum-based" ideas are open to such misuse.



PART II

# The Dark Side

*There can exist, in addition to the aware self, other hidden systems of control of the organism, which can program thinking, can program feeling, can program action, towards destruction of that particular organism.*

**John Lilly**

*The Center of the Cyclone* (1972)

Chapter 6

# Ketamine Dependence (Addiction)

*Some there be that shadows kiss, Such have but a shadow's bliss*

**William Shakespeare**
*The Merchant of Venice*

The use of almost any drug can become excessive and compulsive in some people. A few drugs are highly addictive, while others are rarely addictive. This chapter is about addiction to ketamine, although the term "dependence" will generally be used instead of "addiction" as dependence is now an accepted medical term, is more clearly defined, and (for the moment) still carries less emotional baggage. Ketamine is repeatedly self-injected by animals if freely available, and there is clear evidence of tolerance and dependence in these studies.[27, 371, 382, 425, 426]

What is the risk that the "executive ego" of a person will lose control over the rest of the person's use of this drug?

> I'd estimate that more than half of those who have tried and liked K have become involved in the trap of repeated use…in most cases this syndrome in some way de-structures, disorganizes and even threatens their lives…[563]
>
> **Rameses Sputz**
> *High Times* (1989)

We don't know how many people who try ketamine do actually like it, or what they would do if given an unlimited supply. There are few hard statistics as yet. My view is that ketamine is far more likely to create periods of dependence than any other psychedelic drug, but that the "more than half" estimate is too high and would not be supported by a general survey of users. In my opinion, the group who lose control over their use is unlikely to exceed 15% of those who find the





experience rewarding. This minority, however, is particularly likely to publish its stories; its members were often high profile mind-explorers before they became over-involved with ketamine (*e.g.* Moore, Lilly, and Turner). The books written by these authors have led to an exaggerated perception of the risk of dependence in the subcultures they address. The risk is certainly very high in comparison with drugs such as LSD, DMT, and psilocybian mushrooms, but it is not more than half of those who like it.

It is interesting that many of the seriously compulsive users discussed in this book are or were towards the higher end of the intelligence scale. Moore and Lilly were not alone in this respect. For example, one of the more serious users I interviewed had engaged in over 10 years of i.v. binges, including 300 mg i.v. injections and several episodes of smashing all the vials. He is now a full professor of mathematics at a very prestigious Ivy League university in the United States, and confines his ketamine use to periods of travel in other countries. Another contributor to this book, who bought a large bottle of Indian "Keti" and became dependent on it, then received a first class degree from the University of Oxford in psychology (he said that all of the psychology he knew he had learnt from taking ketamine, but it eventually led on to heroin dependence because he overcame the "needle barrier"). Numerous Ph.D. students contributed to this book. One straight-A Ph.D. candidate said that overcoming his ketamine problem was "harder than heroin." A possible reason for the link with intelligence is the key role of glutamate and N-P receptors in thinking. These people may have more N-P receptors of a particular type, in a higher concentration in certain parts of the brain, and thus have more dramatic psychedelic effects when they take ketamine, because ketamine binds to N-P complexes.

## "Agents of the Molecule"[563]

There are now many anecdotes about compulsive users,[306] but there are still relatively few cases in the formal journals.[8, 226, 297, 244, 542]

This situation is likely to change.

### D. M. Turner and *The Essential Psychedelic Guide*

The road to the Palace of Wisdom may lead through the Valley of Excess (William Blake), but the traveler must sometimes clamber over dead bodies before ever glimpsing the pearly portals:

> A major concern regarding safe use of Ketamine is its very high potential for psychological addiction. A fairly large percentage of those who try Ketamine will consume it non-stop until their supply is exhausted. I've seen this in friends I've known for many years who are regular psychedelic users and have never before had problems controlling their drug consumption. And I've seen the lives of several people who developed an addiction to Ketamine take downward turns. After about two years of once-per-week Ketamine use I even found that I had developed an addiction…Amongst those I know who use Ketamine, I've seen very few who can use it in a balanced manner if they have access to it…One of the most remarkable things I experienced in becoming aware of and breaking my Ketamine addiction was the intervention of…[psilocybian mushrooms and DMT]. The DMT provided insights into the negative effects Ketamine was having on my life: a reduction in ambition; a reduction in healthy mortal fears, such as the fear of death; as well as a reluctance to confront fears or difficult tasks and situations directly. Frequent use of Ketamine can lure one as an escape since a blissful and fantastic state of fearless, disembodied consciousness is so easily available.[591]
>
> **D.M. Turner**
> *The Essential Psychedelic Guide* (1994)

(Turner's death in 1997 was ketamine-related; see Chapter 2.)





### The Story of "D"— Paradise Lost

A student at an Ivy League American university recounted the following tale to me of her boyfriend's ketamine dependence. I interviewed him later and confirmed the account:

> "D" is 21 and from an affluent family. When he was 19 we started getting involved with the rave scene—ecstasy, acid, speed, *etc*. It was after a few months of this lifestyle that "D" was introduced to ketamine. I remember vividly the phone call: "I've found my drug." He described a K-hole much like many we have experienced since: vivid traveling through a world meticulously created in our minds. (He had snorted it.) K was not in the rave scene where we were at the time. No one knew what it was. "D" and I changed that about a month later when "D" found a connection for it and started selling it out at parties. We bought bottles and dried them and bagged up the powder into little bags. [She describes his use becoming daily and the various problems that this caused.] Our relationship was awful. He was constantly lying to me about using K, and his doing so caused me a great deal of pain. I tried to break off the relationship. "D" refused to let me go; said he would stop using. The next three months leading up to where we are now have been a hellish blur. "D" started injecting to hide it from me, and was an emotional wreck. "D" was always an amazingly strong individual with very high self-esteem. Now he was always crying, doing any drug that he could behind my back to try to make the pain go away. One night I was really upset and called his mother and she told me that last Tuesday they had had an incident there. "D" apparently injected and stumbled out into the hall, knocking something over. His parents and sister came out, and of course they were terrified. Even though they had seen him in a K-hole before, they had never seen him like that. His sister called 911 and an ambulance, as well as the police, came. They took

"D" to the hospital, and of course he was fine by that time, but the police found a syringe in his room. I got really upset as I finally realized just how low "D" had fallen. I did not know he had been injecting quite a bit. He stayed with me for two weeks, and I thought that things were okay. I thought he wasn't going to do K any more, that we could save our relationship. Well, the second he left my dorm, a friend of his picked him up and he did K (snorted). He went back to his apartment where I called to say hi, and to my horror, was on K. He denied it for at least ten minutes, but I knew, and eventually he admitted it. I was a mess, in so much pain that I could not deal with it. In any case, I realized that everything was exactly the same, that he couldn't not do K. He went off for a vacation and came back swearing that he'd never do K again. I mistakenly allowed him to come see me, as long as he was not on drugs (which he swore he wasn't). But when he arrived, it was obvious that he had done something, which he said was just pot. It hurt, but at this point I was just glad that it wasn't K. He left to call the guy he owed that money to from a pay phone, and when he came back he had obviously done K. He denied it, but he couldn't talk, his eyes were shaking. I made him empty his pockets, looking for a white bag, but there was not one. I looked up his nose, looking for powder, there wasn't any. So I resigned myself and checked my sanity and tried to calm down. After a little while, "D" got up and went to his coat. I quickly went with him—he went in one pocket and I went in the other. To my horror, I found a syringe. In his hand I found a bottle of K…

**K.U.**

I was in New York on a visit arranged by Zerkalo films. They were producing a documentary for the Discovery TV channel about the NDE. The concept involved being interviewed against different parts of the City as a model for different brain areas. I also wanted to interview some very heavy injectors, so I met up with "D" on a warm spring night near Central Park. It was his 22nd Birthday, and he had already injected a lot of Ketaset® and snorted some "glass" (methamphetamine). This combination allowed him to talk, although a friend who stuck to the glass was guiding him around the city:





*So why did you go into residential rehabilitation?*

Well, ah, ah… I was doing four, ah, four… four bottles of K a day (4 grams of Ketaset® by injection). I'm the world's biggest ketamine, ah, ketamine addict.

*Why did you leave the rehab?*

They didn't know anything about it. No one knows what you're talking about. I didn't know if I was in the past, the present or, ah, ah, the future.

The residential rehab, on this particular occasion, was a failure. This book will help more people to know what he was talking about and what can be done to provide some genuine assistance, the focus of the next chapter.

### The Mixer: Cocaine, Ketamine, and Club Culture

I first started sniffing K to accompany my ecstasy because I found the combination to be utterly euphoric. After a while, however, K became my main course at clubs. Within a couple months of use I found I was spending all my money on K and I hailed it as the wonder drug because it mixed great with X, marijuana, LSD, and coke. Eventually I stopped buying cut K from club dealers and started buying my own liquid bottles of

Ketaset®. These I would air-dry and smoke with marijuana or sniff. I experienced several near-death experiences when I was late in my K use. By this time I had been using K on average of twice a week for about 2 years always mixing it with other drugs. At this point I was very addicted to cocaine and a mixture of coke with K was my favorite combo for when I was at clubs. I would come home from a club at around 5 or 6 in the morning having been up all night on C, K and usually weed. This is when I would sniff some really big lines of coke and a huge mound of pure K… This world kept calling me back but it never gave me anything except insanity. I was a victim of the delusion that someone or some force was trying to tell me some great secret and that if I kept going back I would unlock the mystery. By this point the rest of my life was in utter chaos—I was having trouble at work and generally just communicating with people. This shit all ended with me having a cocaine-induced seizure one night and several months later working a program of recovery to get better… (my friends) have all stopped using K and most are now serious problem drinkers.

**K.U.**

### The K Road

As with most of the longer accounts, the following has been edited (interview questions have been edited out for reasons of space), and I have added explanations in places as there are some fairly obscure cultural references:

> One Sunday afternoon in the early eighties there came a knock, knock, knock, at the door of my house. Not exactly the Big Bad Wolf but one of my fellow students asking me to come for a ride. I descended the path to the street and was ushered into one of those black penis style sports cars. The Dark Dildo





from Hell, like being collected by Dracula's Coach before heading for the Castle. I was astonished to see a senior academic type, who I knew very vaguely, crouched behind the wheel of this thing. I had never had any social contact with the man and now he appeared to have come for my soul… My amazement was compounded when he pulled a large paper bag from the glove compartment and said, "Have a pinch. Have a BIG pinch. It's cocaine and ketamine." There was a lot of powder in that bag. What really impressed me though, more than Professor Soulcatcher and his big powder bag, was that he himself snorted a huge amount of powder, started the car, and accelerated into the road with all of us in his disconnected hands. I was being taken for a ride all right, and what a long strange trip it's been, with quite a few returns by the Grateful Near-Dead… I guess Le Stat had quite a tolerance (AUTHOR'S NOTE: Le Stat is the most powerful vampire in the Anne Rice book *Interview with the Vampire*). I guess the coke kept him down in some version of the world as we know it, but the sheer riskiness of it all is still jaw-dropping today. Not to mention that loose talk could have sunk his space ship… Well, I had a BIG pinch as instructed, but it was very mild compared with what was to come in my injecting days. A sense of distance, like standing in a large cathedral, very short-lived, and not a lot more. That was the first and the last time that I snorted K. I moved on and my path never crossed Soulcatcher's again, but I did come across a bottle a few years later and decided to investigate the matter further. I got that K home and just went straight for the i.v. shot, 100 mg. It was quite impulsive from the very beginning, as if I was casting off on a long journey for reasons known only to the deeper parts of my mind. I'd never injected anything before. The next thing I was aware of was flying down the street outside towards the Park. Then I was back. It only seemed to last about a minute. No Eternity on that trip. My girlfriend said that my soul seemed

to have left the body, leaving a disconnected staring shell. She thought that I had stopped breathing and was shaking me and shouting and generally freaking out, but I didn't have any awareness of it. To tell you the truth, it scared me shitless as well so I just put it aside for a while. But then I started thinking about it again. Maybe the dose had been too high. Maybe doing an i.v. like that was a mistake. Maybe doing it with all the lights blazing wasn't the best approach either. It had all been very compulsive, that first shot…

So I went back for another look with gentle music and dim lights. I tried 50 mg in the shoulder. Fascinating, Captain. An amazing new world of color and myth. I'd had some leanings towards being Merlin as a child, with maybe a dash of Grail Knight thrown in. K made it possible to enter that magic. I should admit, however, that I was in a green shiny insect world on that second hit—a nice green shiny insect world, but nothing to do with Heraldry and Wizards. My favorite K music for a while was *The Blurred Crusade* by The Church, and that's really what it was—a blurred crusade, a quest for the color and magic, which was missing from my life. Looking back, I would say that it was a quest for the Holy Grail.

My girlfriend during those years was quite intuitive and gifted with the second sight. She looked at that little bottle and said: "I have a feeling that's going to be your downfall." A true prophecy in a way, but of course falling down from something is not necessarily a bad thing. It all depends on where you land, and what you're falling out of. You could say that an escape from the Wicked Witch's tower was a "downfall," if you went out over the wall.

With some time off here and there, the next decade was measured out in those little bottles, with each relapse more





serious than the last, and the compulsion to use over-riding everything else when it struck. On buses, in parks, toilets, cars, anywhere. I remember when my car broke down in the desert. There was just me and this guy I had known from childhood, who was not into the juice (that's one of my private names for it) at all. He'd tried it a couple of times, became a robot, and didn't really go for it. I remember seeing him on it once a year before. He was walking around like the robot in *Lost in Space*. Anyway, we abandoned the car and got on a long-distance bus from a small town on the edge of the desert. The bus was empty except for him and me, and the driver. Night fell. He was sitting in front of me. Well, I don't remember much of that trip but he said later that every time he turned around I had my trousers down and was jabbing myself with K using a fuck-off huge needle into the thigh. So what else are you supposed to do on a long boring bus trip at night? Seemed like a reasonable solution at the time. I think I thought that I was in a spaceship of some kind. Man, I felt sick as a dog when we got to the City in the morning. Poisoned. Yeeuck. It's life Jim, but not as we know it.

It took a few years before I tried it i.v. again after that first shot. The reason I gave myself for going into the mainline was that I didn't want to be up half the night, or I had something to do later, or I wanted to be down by the time my girlfriend came home. A shot into the vein was always fast on and fast off. Eventually I got really into the needle thing. I would get pleasure watching the blood rush into the syringe, a crimson orgasm in the injection Karma Sutra. I thought about injecting into my jugular just for the sheer hell of it, although my arm veins were great big pipes that would never fail. I loved that shot in *Pulp Fiction*…

I had largely stopped doing K i.m. by the end of the '80s, although occasionally I would still inject into my shoulder when I didn't want my girlfriend to know that I had gone to bed on K. Needless to say, the strategy never worked and it was always glaringly obvious as I would make weird movements and then talk all the time on the way down… Eventually I stopped jabbing into muscles altogether. It just went straight into the vein for that incredible rush. There's no rush like Super-K, the Last Supper of Champions… I wish I never tried it i.v. though, because I wouldn't have become so hung up on it without all the extra needle stuff. You're basically passing out as it comes on. I injured myself a few times. I've passed out with the needle still in. You get blood everywhere… The search for the Holy Grail, the cup that held the blood of Jesus, the Son of God. Everything got bloodier and bloodier towards the end. About 7 years after I first injected myself, there always seemed to be some blood on the sheets when I did it. It was strange because everything was clean at the beginning. A few years later and I was having some kind of blackout. I was collapsing and coming around with grazes and bruises which I couldn't explain… and I felt that I was going mad when I was on it. I started to hear white noise like radio static and wondered if it was schizophrenia. Something else very unpleasant seemed to happen in my brain a few times in the last year that I did it… something going wrong with the electricity in my head. Then again, maybe not. A few years before that I went through a period of thinking that I had gone permanently mad whenever I did it and would be spending my life in a loony bin, and before that I thought that I had damaged my memory for good, or was going blind, *etc.* I had two dreams in which the same thing happened. The same horrible sensation of something terribly wrong with the brain itself rather than the mind. I would wake up thinking that I had become epileptic. Still, I also had a dream that K was making me go





bald! And I'm still a very hairy guy. So who knows? Maybe it was all just more of my hypochondria. I was always prone to it. I'm not actually blind, bald, epileptic, stupid, or demented… things got really bad towards the end. I would score some juice and then I just couldn't wait to do it. Couldn't even wait to get home… but I had no withdrawal at all. I was never depressed afterwards either. It's very different from speed and coke that way… and booze for that matter. I could just stop K and never miss it but having bitten of the pomegranate, the Underworld just seemed to call me back, like Persephone. (AUTHORS NOTE: He is making a reference here to a Greek myth. Persephone was abducted to the Underworld by Hades. Hermes, a.k.a. Mercury, came to rescue her but was not in time to prevent her from eating of the forbidden fruit, in this case a pomegranate. Because she ate of the fruit of the Underworld, Persephone thereafter had to spend the winter months with Hades, although she spent Summer in the over world with her mother Demeter, Goddess of the Harvest.) In the final days I went through a phase of injecting into the little veins on the back of my hands. There were various reasons. I didn't want my latest, straight girlfriend to know I was doing it and things had reached the point where she would check my arms for needle marks. I also did it that way if I was outside and there were people around. I mean, you can't just roll up your sleeve and have a hit in the Park can you? I would put my hands under my coat and do it. Strange skills you learn in life… I once told a taxi driver that it was time for my insulin and had a shot in the back of a cab, figuring that I would be talking again by the time we arrived. I was right, but now and then I got it wrong.

In 1984, a gram bottle would have lasted me a few weeks. Just before I stopped I would keep hitting it through the night until the bottle was gone. I wouldn't do more than that though,

a gram, and I wouldn't do it for more than a few days at a time. It's more that when I wanted it I really had to have it, and I had to have all of it. Then I might lay off for a while.

…My tolerance was high but I've heard of K-heads who were doing far more. I took what I thought were large amounts at the end, in the hope that if you put a kettle on it has to boil, but I couldn't bring back the exciting journeys of the early days. You just pass out without anything interesting happening. I was taking it for the after-effects at that stage—to get high.

...Pains? No. I never had any funny pains or strange illnesses at all. Despite the hypochondria, my brain was tough as well. In all those years, I never had a single flashback or anything happening when I wasn't on the drug. I never went mad and the men in white coats never did come to take me away. The nasty stuff was always very brief. I never had to see a doctor because of my use of K.

I stopped because I found what I was looking for. I found the Grail. I managed to make real in my own life the magic I was seeking without taking any more potions. The quest, or at least that part of it, was complete. I think that my K journey made me far wiser. It opened me up from the narrow-minded, closed and opinionated person I used to be and brought back the color and the light. Now I can live creatively without taking any potions at all. Pilgrimage is an ancient and respectable path. It has heavenly regions and it has hell. The Via Dolorosa. Like Pilgrim in Bunyan's story, I went through the littlest gate and stepped out on the K road. (Author's Note: This is a reference to *Pilgrim's Progress*, a puritan tale of the path to salvation.) The K road goes all the way from the Ultimate Structure at one end to Chaos at the other, like that road





in Zelazny's *Amber* books—from the Eternal One True City surrounded by shadow realities to the Courts of Chaos, so pass the trumps! I was walking in Shadow. (Author' s Note: this is a reference to a book called *Nine Princes in Amber* by Roger Zelazny. The main characters travel to other realities by staring at images painted onto trump cards from the Tarot, described as "walking in shadows.")

It can become a power struggle. I used to feel that I had to face it down, face down Odin's Hammer. I heard it pounding on one trip. The Anvil of the Titans. Scary trip that one. It's not a path I would ever recommend to anyone, but the Grail quest was supposed to have its dangers. Walk in the Valley of Death too often and its shadow will reach out for you in one way or another. At the end of the day, I'm glad I walked the K road instead of getting drunk in a hotel room and hanging myself like some rock star. I'm not sorry that I put a belt around my arm rather than my neck. I'm not sorry I climbed an inner mountain instead of an outer one—and plenty of people have fallen off those. I'm a better man than I was 10 years ago. Everybody has their own road to walk, and I walked mine. *Je regret rien*. I won't be taking K again though. Mirkwood and Xanadu are several years and thousands of miles behind me now. Keep on walking, don't look back…

**K.U.**

### What is Dependence?

Dependence may take those in the alternative spirituality (New Age) movement by surprise. Ketamine is often the first addictive psychedelic they have encountered. Developing the behaviors of a drug-dependent person can be a new experience for these people, a very different revelation from the one they were hoping for. These behaviors include swearing off for a period of time—perhaps forever—and

being unable to stick to this decision (sometimes reversing it in the same evening), denying to others that they are using ketamine when they don't usually lie, and continuing to use despite evidence of harm of one sort or another.

"Addiction" has become a loaded and pejorative term that these users often reject out of hand, preferring alternative expressions such as Lilly's "the repeated use trap." However, phrases such as the "repeated use trap," "seduction by K"[363] and becoming "an agent of the molecule"[563] shift responsibility onto the drug. It is then the drug that is at fault, not the person taking it, who is of course helpless in the face of such an entrapping, seducing, scheming Master-chemical.

The modern medical term "dependence syndrome" is hardly more acceptable to many psychonauts. Nevertheless, some journeys of inner discovery have come to resemble dependence at an early stage. The definition of dependence adopted by the World Health Organization (1992) does not necessarily require either physical withdrawal symptoms or daily use.[628] Most of the following features should be present: 1) a strong compulsion to take the drug with difficulties in controlling the onset, termination and levels of use; 2) tolerance; 3) use of the drug has taken on a higher priority than other behaviors that once had greater value; 4) a gradual neglect of alternative interests and sources of pleasure; 5) more and more time and effort are spent obtaining, taking, recovering from, talking about, and thinking about the drug; 6) there are arguments with partners about the level of use, and concerns expressed by family and friends; 7) despite obvious evidence of harm, such as problems with memory, word/name recall and attention span, harm to relationships with other people, and loss of productivity, the person persists with their use; 8) if there is a dry period followed by further use, there will be a rapid return to using large amounts in an uncontrollable way—often exceeding the point where the person left off. Maybe the person can abstain, but he or she can almost never be temperate. A shift from snorting to injecting is linked with heavier use (as with amphetamine[201]) as is the further shift from mainly i.m. to mainly i.v. use. The risk of physical





injury will then rise sharply (usually from collapses), and the compulsiveness and urgency of the behavior also increase dramatically with this shift in the "route of administration."

### Rage, Rage Against the Dying of the Light (Dylan Thomas)

> I regret the great tolerance that one can develop to this drug, since it has stopped me from again experiencing that extraordinary voyage to the center of the One.
>
> **K.U.**

Doing something pleasurable and/or interesting often leads to wanting to do more of it. Where some drugs are concerned, this can result in tolerance leading to further increases in dose and frequency, developing into a binge. The psychedelic journeys may still occur to some extent, but become increasingly difficult to remember. To the partner in the observation lounge, a long-term user can still sometimes appear to be involved in off-planet dramas, although they themselves eventually have almost no memory for these on their return, and they are certainly "back" very much sooner than a new user. Increasing the dose eventually fails to switch the lights back on again, and may have the opposite effect, as with these doses there may be even less memory for the journey. Tolerance can be very high. A dose that would incapacitate a new user for at least an hour can have a veteran back in a few minutes. Tolerance has been noted in studies by anesthetists.[92, 372] It is marked and rapid. The ketamine requirement of a child undergoing a series of operations had increased 250% by the 13th treatment.[51]

A break of several years does not usually reverse tolerance to the psychedelic effects. The "no way back" situation applies to a wide range of drugs. Some heroin users are always trying to get back to the "first blush" but are unable to do so, even on near-lethal doses. Some persons with alcohol dependence can drink until they collapse without becoming merry. Some heavy MDMA users can still not find the "love effect," even with 250 mg i.v. of dissolved pure powder.[257] There

are heavy cocaine and amphetamine users who, by the time they give up, may become paranoid each time they use rather than euphoric. After years of abstinence, 10 minutes into a relapse they become paranoid again. The experience will be closer to the last time they used rather than the first.[517] In a similar manner, if heavy ketamine users take a break for a year and then resume, the effect is often the way they left it at the end rather than the way it was at the outset. It seems that there is no way for the journey to begin again at its original departure point. This persistent change has both a mental and a physical basis.

The mental aspect of this tolerance is a self-protective defense; part of the mind says "enough." It is not ready to visit that place again, and it acts to suppress effects that made the drug attractive to the user. Sometimes the extreme nature of a drug's effect on the mind predicts the speed at which tolerance develops better than the impact on brain cells. Like ketamine,[92] LSD can result in an almost immediate tolerance, even though LSD has not usually been linked with lasting cell changes.[193] A dose of LSD the next day may have far less effect. Reconciling the animal data with this theory requires that, contrary to Cartesian philosophy, we consider animals to have a mind. The tolerance to ketamine that develops rapidly in all species, including after a single large dose, is not a sound basis for discarding a mental contribution to changes in response.

Mental tolerance can be seen as an expression of Freud's *Eros*, the drive towards life and self-preservation of the mind that, in Freudian theory, battles with *Thanatos*, the death drive.[159] This is understandable as the compulsive user may become less engaged with external life while mounting a sustained attack on the ego (which may not wish to undergo daily "ego death") and an attack on the normal intellect. Thus unconscious self-defense mechanisms deprive drugs that are used excessively of their more attractive features. The final effect is the result of a battle between various forces pulling in different directions. In some users, self-preservation wins. They stop using the drug as the effects become less interesting. Those seeking "alternative spirituality" often view the cocaine-like effects of ketamine as a very poor cousin to the profound near-death experiences of the early days. In other users, the more basic pleasures become an end in themselves and use increases. Frightening experiences and panic attacks may then also become more frequent, another type of defense.





The physical basis for tolerance includes changes in receptors,[426, 624] cells,[231, 439] and protein expression by the genes (DNA) mediated by messengers traveling inwards from the cell surface receptors,[222, 224] and increased disposal via the liver.[382] The dopamine "pleasure" system (also known as the "reward system"), which stimulates "pleasure areas" in the brain such as the nucleus accumbens,[322–3] can show lasting change after prolonged use of stimulants,[70, 231, 500, 517] and the serotonin system is also thought to be involved in this process, to a lesser extent.[323]

Some of the references given above are to cocaine and amphetamine research, because these drugs share some effects with ketamine on the dopamine messenger system in the brain. Thus both mind and matter produce tolerance, leading the majority of users to stop taking ketamine when the magic has run out, while a minority take ever more frequent doses in a vain attempt to again push open the doors of dissociation.

### A Faustian Pact, Signed in Blood

The "beyond within" may be seen as infinite in size, and the inner exploration as never complete. Some travelers wish to return again and again, to go further out and further in. The LSD-like drugs are often too exhausting, emotionally harrowing and potentially unpleasant to be taken frequently for this purpose. Ketamine, however, may sometimes allow an exploration of inner realms without this maelstrom. Although this pain-killer (it is an excellent analgesic in more ways than one) sometimes appears to bypass the puritan ethic of no pain/no gain, despite its "nightmare" media image, the risk in some people is dependence. The Ferryman may yet come to demand pay-

ment in the end.

We can gain insight into some aspects of the mental processes involved from Goethe's *Faust*. The bored and frustrated professor made a deal with the Devil to gain access to "Ultimate Knowledge and Experience." He was taken for a wild flight over all that exists. "Forbidden" knowledge and its consequences are important themes running through this play, as are the male/female balance and the sin of narcissism: mistaking one's ego for the whole of the self.

We are sometimes told that the pursuit of material goods will not make us happy. *Faust* is a reminder that the pursuit of intellectual goods can also be soulless and unfulfilling. However, the book also warns that necromancy, and its metaphorical modern equivalents, can be a perilous method for re-colorizing the inner landscape. The issues dealt with in *Faust* partly explain—this time on the mental rather than the physical level—why some of those who have become over-involved with ketamine so far are intelligent academics, intellectuals, and professionals.

The following quotes are extracts from scenes 1–4 of the "First Part of the Tragedy," taken from the translation made by Bayard Taylor in 1870:

> FAUST: I've studied now philosophy And jurisprudence, medicine, even, alas! theology—From end to end, with labor keen; And here, poor fool! With all my lore I stand no wiser than before… Wherefore, from magic I seek assistance, That many a secret perchance I reach Through spirit-power and spirit-speech… That I may detect the inmost force Which binds the world, and guides its course…When I the starry courses know And Nature's wise instruction seek With light of power my soul shall glow As when to spirit spirits speak…I feel thy presence, Spirit I invoke! Reveal thyself!…I feel thee draw my heart, absorb, exhaust me: Thou must! thou must! and thou my life it cost me!





> MEPHISTOPHELES: In this sense, even, canst thou venture. Come, bind thyself by prompt indenture, And thou mine arts with joy shall see: What no man ever saw, I'll give to thee.

Faust agrees on the proviso that he has total satisfaction, and this will be evidenced by his desire to hold on to a particular state of being, rather than seeking to let go:

> FAUST: When thus I hail the moment flying: "Ah still delay—thou art so fair!" Then bind me in thy bonds undying, My final ruin then declare! Then let the death bell chime the token Then art thou from thy service free! The clock may stop, the hands be broken, Let time be finished then for me![176]

The contract (also described as a wager) is signed in blood, a fluid that comes to acquire symbolic significance for some i.v. drug injectors. The reference to time stopping will ring a chilling chord with those ketamine users who have been trapped "forever" in eternity and didn't like it.

This play has sometimes been described as a spell that transports the reader to other realities.[125] Jung was very impressed with *Faust* and spent some time pondering the tale. He noted that Faust's longing for "the other world" resulted in a loathing of life leading him to the brink of self-destruction, while his equally excessive longing for the beauties of life:

> plunged him into renewed ruin, doubt and wretchedness… His mistake was that he made the worst of both worlds by blindly following the urge of his libido, like a man overcome by strong and violent passions…[293]

### The Great Escape and The Great Inscape: Return to the Source

Ketamine can provide a dramatic break from the pains and

problems of the everyday world. There are few drugs offering such a complete escape without actual loss of consciousness. It may appear to take the user out of the body, the room, the house, the city, and often right off the planet and into another universe altogether. It may even appear to take the user beyond life, through the Valley of Death, and out the other side again. Ketamine dependence can result from the desire to turn this "adventure holiday" into a lifestyle. One of the ketamine paradoxes is that this escape may also reflect a desire for confinement, a return to the womb or, according to those with more mystical leanings, even further back to "the Source." Some types of ketamine dependence could arise from unresolved birth trauma issues, where there is a drive to continually repeat the birth process of confinement and escape in an attempt to achieve resolution of the unresolved, pre-verbal issues.[283] This may be what some people are trying to master when they say they are determined "to face it down" or, as Moore said, "to stay with it until it's tamed."[423]

### Spiritual Starvation and Spiritual Excess

Some addictions have been said to arise from a lack of spiritual sustenance, and to be a maladaptive attempt to re-connect with this aspect of being. The view that drug use is now at high levels because God is dead and we live in a meaningless, mechanical universe tends to source this "pathology" to the 17th century, when the ideas of Descartes are alleged to have alienated humanity from nature by stating that the mind was separate from the body and not actually a part of nature.[632] From this perspective, before Descartes the cosmos was more likely to be seen as alive and possessed of its own soul, as were plants, planets, and most other things. There appeared to be meaning, purpose, Gods, and the "love of God" interacting with human lives. The Newtonian-Cartesian tick-tock system eventually led some influential thinkers to view humans, consciousness, and life itself as meaningless accidents, adding to what Bertrand Russell called the "unyielding despair" of modern times. In this century, for example, we have Richard





Dawkins, Professor of the Public Understanding of Science at New College, Oxford, declaring: "we are survival machines—robot vehicles programmed to preserve the selfish molecules known to us as genes."[104]

There may be a link between drug dependence and alienation from parts of both the self and the external world, but perhaps too much is laid at the door of Descartes and Newton (and, perhaps in the future, at the door of Richard Dawkins and others who have promoted the belief that our lives have no meaning). For many ordinary people, the Middle Ages, for example, were not a time of idyllic connection. Life was often brutish, painful, and short. Nor is there anything new about excessive drug use. William of Malmesbury observed in 1082 that the English "were accustomed to drink till they were sick." The romantic claim that there was less selfishness and narcissism before Descartes is absurd. Narcissism was rampant in ancient Rome and Greece, the period when the heavens were seen as teeming with interfering Gods. We have many examples of extremely self-centered behavior from these periods, not the least of which was the alleged behavior of the Gods themselves. (The term narcissism derives from a Greek legend.) As for the modern rape of nature allegedly resulting from our alienation, vast forests were burnt down by pre-Newtonian, pre-Cartesian peoples. Some supposedly God-fearing rulers of the ancient world would not have hesitated to engage in nuclear mass-destruction, and would have plundered nature extensively if they had only had the means available now.

Questions can also be raised about the "alienation" of modern times. In some ways, we live in the most highly participatory and connected era in history. Many countries have some form of electoral democracy, social welfare, public health, television, international travel, the Internet, and telephones. The term "global village" does not ring with unyielding despair. Despite the claimed death of God, there is abundant evidence that people are more concerned about the welfare of strangers, even strangers on the other side of the world, than ever before. More barriers have been broken down than have been erected, and there is a greater belief in the oneness of humanity than ever—a

belief that is strongly supported rather than undermined by the study of genes. These genetic studies show that we are all related to a far greater extent than scientists had previously imagined, although the "African Eve" hypothesis seems increasingly unlikely.[23]

Rumors of the death of God in the modern age have also been exaggerated, although the "creative principle" is now less often viewed as a vindictive old man.

Rather than spiritual starvation, there are some persons who are drawn to ketamine through their extensive involvement with spiritual ideas and beliefs. They may seek, at some level, to become spirit and to depart this mortal coil prematurely, either by conscious or unconscious acts. For example, Moore was immersed in spiritual thinking for decades, and very focused upon "the higher self," before she ever took ketamine. In the Victorian era, the pre-Raphaelite painters were often devout and spiritual Christians, yet some of the brotherhood consumed large quantities of laudanum (tincture of opium). Their ethereal model Elizabeth Siddal killed herself with a laudanum overdose, and spent much time in a bath-tub pretending to be dead (so that John Everett Millais could paint the drowned Ophelia). Dante Gabriel Rossetti's painting of Siddal's death in 1862 from the poppy (she was married to him when she died) is called *Beata Beatrix* (1864–1870) and illustrates the profound involvement of the couple with spiritual issues. Their fascination with Dante d'Alighieri (author of *Inferno* and *Paradiso*) is echoed by some ketamine users.

A leading program to treat most forms of dependency is the 12-step approach. The 12-step systems grew out of Alcoholics Anonymous into many different branches of substance/habit-Anonymous. At the core of this approach is surrendering the ego, the "I," to a "higher power" and emphasizing connection with others, particularly those who have been hurt by the person's behavior. The 12-step approach is thoroughly steeped in transpersonal psychology and employs many concepts also used by those who had an interest in psychedelic therapy. Alcoholics Anonymous took its inspiration from Jung's phrase "Spiritus contra spiritum" (Spirit counteracts spirits, *i.e.* alcohol), which





was itself based upon William James' observation at the turn of the century: the "best remedy for dipsomania is religiomania."

Moore believed that ketamine put her in touch with her higher self, and yet she was dependent on it when she died. Ketamine psychedelic therapy has been used with over 1,000 people who were alcohol-dependent, sometimes for the purpose of putting them in touch with their "higher selves" in an attempt to prevent their premature deaths.[332] Once again, the issue seems to be one of balance.

### Splits in the Self

Some forms of drug dependence are thought to arise from a denial of important parts of the self. Neo-Jungians sometimes divide up the psyche into "inner masculine" and "inner feminine" parts regardless of the person's sex. Others add an inner parent, an inner adult, and an inner child, each of whom is also split into male and female. We could even add the traditional Jungian concept of "the shadow" to this busy scene. The shadow is the dark and frightening, unacceptable part of the self. In this enlarged inner family, it has been suggested that there may be several denied aspects of self all clamoring for expression. As an example, consider a child who has an inner part seeking to become an artist. His mother wants him to be an anesthetist. He does not listen to the inner part and the internalized representation of the mother "squashes" this part of the psyche into silence. He enters the clinical, antiseptic world of operating theatres to become an anesthetist, and can no longer receive clear communications from the part of himself that craves more color, beauty, and creative expression than are generally found in that working environment. He is increasingly unhappy. He doesn't know why, but he feels a strong need to transcend himself in some way. This compulsion towards self-transcendence may be the means by which the "suppressed inner feminine" hopes to dissolve barriers and influence the ego.

There are several ways in which the needs of such a drive can be met, both healthy and unhealthy. For example, as a result of this drive

he may take excessive alcohol or other boundary-dissolving drugs such as ketamine, a "solution" encountered on the job. Consumption of these drugs may remove his defenses and allow the denied part to express itself more freely. He may heed the message and make changes in his life, or he may ignore the message, become even more distressed, and use more drugs. The resulting problems may force him to change. This often involves either some realization of the denied parts of the self, or choice of a different route to self-transcendence. In this particular case, a full recovery may be less likely unless he can realize some beauty and creative expression in his life. This need not require a destabilizing change of profession or partner.

The suppressed part of the self may also feed a problem with commitment. This problem arises from a search for the denied part of himself externally in other people, such as his partners. However, no other person will ever be an exact match for an inner part of him, as that other person will inevitably have their own archetype of self. He will attempt to mold the more malleable partners, but these relationships are usually doomed to failure Much of *Faust* concerns Herr Professor's relationships with other people and his chronic inability to commit himself to anything, and this can be read as the tale of such a person. Goethe himself had a serious problem with commitment to people.

Some of those who have died from using ketamine were women (Ariel, Carol Carlssen, Marcia Moore, and others), and these women were deeply immersed in colorful, artistic, highly creative "alternative spirituality" enterprises. In these cases, it is possible that the search was for what neo-Jungians sometimes refer to as the hidden "inner masculine" rather than the "inner feminine," represented by symbols such as the holy grail. Moore made a specific point in her book, on several occasions, of stressing her inability to handle money and finances.[423] Some neo-Jungians, such as author Linda Leonard, consider this to be an aspect of the "wounded woman" syndrome, and trace it back to problems in the relationship with the father.[357] The way in which Moore married Alltounian within a few weeks of meeting him





(and he decided to seek her out having seen a photograph on a book cover) suggests that there was a high level of "projections" in the relationship, as they did not seem at this early stage to really "know" each other at all. Their perception of having met in "past lives" may be (at one level) another way of saying that each recognized an aspect of their own being, which they knew in childhood but had forgotten, in the other (*i.e.* they "projected" what they wanted to see onto the other, like a film projector in a cinema projects onto a blank screen).

There are sometimes hidden (or not so hidden) elements of sado-masochism in relationships where people do not really "see" the other person, but are caught up in a fantasy. Some parts of *Journeys* appear to foretell the author's death, as she lists the many terrible ways in which she has been killed in her "past lives," repeatedly being "violently dispatched" as she put it. There are also passages suggesting that a deeper part of her is unconsciously attempting to frame the innocent and well-meaning Howard as her killer. She repeatedly describes him as a collector of swords and knives and of being skilled with "sharp objects" in a way some readers have found chilling. Moore had powerful projections onto her unfortunate husband, and not all of these were benign.

> Most of us have been tortured, burned or in some way crucified in former lifetimes and these ancient traumas still produce their repercussions.
>
> The first lifetime to which I was regressed was one in which I had been…hurled into a volcano as a sacrifice to the local deity…There was also a memory of having been shoved backward over an abyss…To this day it is hard to escape the conviction that [I] will once again be immolated, incarcerated or rudely dispatched…[423]

In an earlier chapter, a be-ketamined Moore warns her husband (who was ten years younger than she was) that little boys who play

with Fire Ladies can get burnt. ("Sunny" was Howard Alltounian's middle name.):

> Marcia: Poor little Sunny is playing with fire. It's not Sunny and the Cosmic Butterfly; now it's Sunny and Fire Lady…I hope that teaches Sunny a lesson. You get electrocuted if you play with fire ladies.[423]

And he was indeed "electrocuted." Although *Journeys* was almost completely written by Moore herself, she made her husband into a co-author (which was unnecessary) and thus ruined his career, and the manner of her sudden disappearance caused him even more damage as there were those who suspected that he had actually murdered her, a common suspicion when a spouse undergoes a sudden, total disappearance with no body being found for two years. A curious rumor then circulated through "the underground" that she had been found without her head, like a modern *Sleepy Hollow* story. The actual cause of death was freezing. Moore was not murdered and she was not headless. Nevertheless, Howard still feels that he cannot return to his beloved Seattle. He is another victim of this drama. When I interviewed him, the impression he gave was that he was out of his depth with Moore, and that what he had represented to her—the little boy who played with the Fire Lady—had been badly burnt.

The death of Ariel, a woman of almost the same age as Moore, is another example. Before taking ketamine, she had been to India with her husband and they embarked together on a spiritual path involving physical celibacy while staying married, which they pursued for almost 3 years before divorcing. Ariel's 7 month, daily involvement with ketamine began shortly afterwards, accompanied by further weight loss as she fell in love with an "Angel on the other side" called Gabriel. Such a fantasy male lover can be seen as an expression of the neo-Jungian "inner masculine." Ariel's suicide suggests that her preference in midlife was for a marriage with a projected part of herself rather





than an actual, real man.

These factors might help to explain why the partners of heavy ketamine users, while they have often tried the drug, very rarely become compulsive users. The girlfriend of "D," Howard Alltounian, Toni Lilly, the partner's of the "K Road" pilgrim, and many of the other "significant others" did not have a problem with ketamine, although they had all tried it several times. The situation seems to be different from that which commonly exists with heroin, where both partners in a couple may be more likely to end up with a heroin problem.

### The Divided Self

It is possible that part of the mind is not completely denied, but competes actively with other parts of the psyche resulting in partial disintegration of the self. Such a person may have difficulty making decisions, lurching first in one direction and then another, and sometimes making little forward progress as a result. Integration can first require the dissolution of boundaries, and the drive to dissolve such boundaries may once again involve drugs (although this can also be achieved by other methods). Themes of integration and disintegration are a common part of ketamine experiences.

A split in the self may also be related to narcissism,[318–9] a condition where the ego is mistakenly identified as the whole of the self. It may have been more appropriate to call this Cartesianism, after Descartes' most famous statement, "I think therefore I am," which fails to address the existence of the unconscious.

The ego may also be identified with elements of the external world, such as cars, which then become an extension of the ego. "Accidental" death in cars can be a meaningful act for some of those who drive under the influence. Dr. Enright, who gave Lilly his first injection of Vitamin K, and then used it with him, went over a cliff in his car not long afterwards (although there may be no significance in this, as Lilly reported that the problem was with the car). Other people and situations are rarely seen as they actually are, but only in terms of their

relationship to the person's ego. The narcissist is often looking for a reflection in a mirror, and may be very attached to an audience. The i.v. use of drugs is more likely to be followed by a degree of needle fetishism in such a person. In penetrating their bodies and injecting a source of pleasure, they can be seen as making love to themselves. Beneath the apparent self-love may lie a deeper well of self-hatred. Injection can also be interpreted as an attack on the self, and may sometimes be seen as a relatively sophisticated form of deliberate self-harm. Heavy ketamine users can become involved in a deep love-and-hate affair with parts of themselves, and may easily project these parts onto people and things around them. If a person takes drugs and says "I love you," it is sometimes worth considering whom they are really talking to, and whether this love has a sadomasochistic aspect.

### Availability, The Law, and Education

Availability is an important issue in dependence. Users are more likely to get "lost in the K-hole" if they have some form of access to the drug, such as drug dealers, DJs, other entertainers, workers in the animal, anesthetic, pediatric, surgical and emergency areas, lab workers, and those who buy drugs in India and Mexico. The friends and partners of these people (Moore married an anesthetist) may also be at risk.

The link between availability and drug dependence is sometimes used to support a law enforcement approach. However, prohibition of a drug has often been followed by increased availability on the black market, adding fuel to the fire. The most likely result of removing ketamine from hospitals would be a rise in smuggling from developing countries and on-line purchasing via the world wide web. This is partly because prohibition makes a drug profitable for dealers. Ketamine is a low-profit line in places where it is not controlled such as Europe. As a result, many European dealers who sell to the club market have not, in the past, specifically stocked the drug, although they may have sold it as MDMA and related drugs. This situation would





change if ketamine became a controlled substance in these countries. The drug became even more profitable to deal in when it became a controlled substance in the United States. The "Ketamine King" of New York still cruised the streets in his Ferrari. Increased dealer involvement changes the profile of groups at risk to one more typical of the general drug user. Now that ketamine is a Schedule III drug at the federal level, there is more likely to be a further, long-term rise in its non-medical use until the trend reaches a plateau.

International control through the United Nations might restrict Mexican, Indian, and other sources, but this would be followed by illegal manufacture. The answer may then seem to be removal of demand by extremely negative education campaigns, but these have not been very successful either with most drugs. An honest, balanced educational approach that acknowledges both the positive and negative aspects of a drug might be more effective in protecting public health, as failure to address the user's ambivalence has been repeatedly linked to the failure of negative education.[414] Balance, accuracy, a conspicuous lack of hypocrisy in the way different drugs are treated (particularly alcohol, a common cause of acute death by poisoning, accidents, drowning, freezing, suicide, and murder) and a clear absence of vested interests other than the promotion of public health have been shown by repeated experience to be important for success. For example, the "Sorted" anti-MDMA campaign (posters with the statement "Sorted. It took one pill to kill Leah Betts") was a resounding failure because drug users knew either intuitively or through "the grapevine" that the odds of dying from taking MDMA were about 1 in a million risk exposures.[518–9, 528] They had personal experience of going to large parties and clubs at which nobody left in an ambulance as a direct result of taking MDMA. In the case of ketamine, many users to date have been intelligent and perceptive. Affecting the behavior of such a population will require accurate and balanced information if public health is to be improved. The declaration that "ketamine causes nightmares and flashbacks" is unlikely to affect the behavior of these people, who may respond with the question, "They inject it into children, don't they?"

### The Novelty Drive

Another risk factor for problematic use is a family history of drug dependence, especially to alcohol. This is due to both learning from parental models (about the use of substances to control difficult feelings and to self-medicate disorders), and shared genes. There may be genetic, neurochemical, and personality differences between those who are inclined to try ketamine, those who like it, those who hate it, and those who would never contemplate taking it. Inherited genes provide the blueprint from which receptors are built, and there are numerous receptor subtypes. Person "A" may have more of a receptor subtype that produces a sought-after effect when drug "X" is taken, while person "B" may have more of a receptor subtype that produces an unpleasant effect when drug "X" is taken. Therefore "A" will be more likely than "B" to take the drug again. Research has clearly linked genetics, dopamine receptors, and inherited alcohol dependence.[80] A genetic difference has been reported between persons with schizophrenia who show a lesser response to ketamine and those who show a greater response.[377] There have been a variety of other investigations into why some people have psychedelic experiences with ketamine while others do not.[36, 95, 100, 313, 401, 448]

People who have a strong drive to take large quantities of stimulants and psychedelics may have inherited under-functioning of the dopamine pleasure system. This may increase the likelihood of depression, anxiety, a fear of immobility and commitment, and a sense of dissatisfaction that is rarely appeased. It may create an inner drive towards seeking a higher level of novelty and stimulation. This does not necessarily have to result in excessive drug use. The needs of the "novelty drive" or "dissatisfaction drive" can be met in both positive and negative ways. For example, this drive may have played an important role in human evolution and the great migrations. Some famous explorers, adventurers, inventors and artists run on this type of fuel, those who need to see what's around the river bend or over the mountains. Biology students are often taught that there is a drive towards homeostasis, stability, order, and the status quo. As always, there is a





counter-force that should also be acknowledged: the drive towards change, instability, and novelty.

### Heads of The Hydra

In addition to being a potent psychedelic drug, ketamine has some effects like those of cocaine, amphetamine, opioids, *Cannabis,* and alcohol. These non-psychedelic properties play an important role in ketamine dependence. The headings in quotes below are slang expressions that have been used for "Special K." So far, this chapter has concentrated on "rock mesc" (*i.e.* "mescaline," meaning psychedelic properties, although ketamine psychedelia is radically different from mescaline psychedelia). We now turn our attention to the more "profane pleasures."

### "L.A. Coke"

> In the past, anesthesia has put people to sleep. Now we have discovered that it can also awaken them to their highest human potential…ketamine is so intense that it accelerates all functions. One senses that the very cells of the body are being jiggled into a faster rhythm
>
> …the heavy user should watch himself carefully since there can be cumulative effects…over excitation, sense of invincibility and of omnipotence.[423]

At psychedelic (sub-anesthetic doses) ketamine doses, the heart rate and breathing speed up, unlike other anesthetics, which slow the body down.[52, 466, 595, 634] Movement in animals is strongly stimulated by low doses, especially after recovery from the trance.[597] There are physical reasons for the euphoria and stimulation that occur as after-effects, following the return from the void.[231–2, 366] In animals, the same dose became more and more likely to have a stimulant effect, and was less

and less likely to produce a trance, after many injections.[597] Prolonged use in humans results in effects increasingly like amphetamine and cocaine. Like these other drugs, low doses of ketamine cause dopamine to spurt into the brain's so-called "pleasure centers,"[57, 158, 232, 485] a powerful effect; block the reuptake of dopamine into cells (a signature effect of cocaine)[300, 317, 443–4] and changes in the dopamine system can occur over time.[70, 231, 317, 322–3, 500, 597] Noradrenalin may also be involved in these effects.[73, 581, 635]

During the ketamine journey, many people report some form of high speed transit through tunnels or that they are strapped into a rocket ship which is accelerating away from the launching pad. They do not feel "as if," but may believe this really happened. The post-trance stimulant effects can be felt as increased energy, talkativeness, confidence, endurance and well-being, and a reduced need for sleep.

> After I'd been doing K for a few months, about half an hour after splash down I would feel like I was wearing seven league boots and could leap tall buildings at a single bound. I'd raid the fridge, order a large pizza, and then go out to a Club. I'm usually a rather shy girl, but K would make me much more witty than usual and I could make everyone laugh. I'd have a lot of what seemed like good ideas at the time, like you do on coke, and would go on and on in one of those endless monologues, repeating myself about a thousand times and generally spilling out all over the place. You know, I never crashed afterwards. Weird that you can get really up without having to pay for it somehow. Free energy from another galaxy I guess.
>
> **K.U.**

Stimulants are linked with a cyclical pattern of self-injection, resulting in a "re-setting" of the dopamine pleasure system that may be long-lasting. These changes suggest at least one basis for craving. The altered pleasure system develops a strong drive to stimulate itself with ever-larger spurts of dopamine, requiring larger and more frequent





doses of drugs or other pleasure-producing behaviors. Hence the urge for food, sex, and more drugs. Low doses of ketamine can sometimes open a deep well of desire for pleasure in all its forms. This is like a fast-growing monster—the more it is fed, the bigger it gets, and the bigger it gets, the more ravenous it becomes, resulting in the monster becoming even more monstrous. Eventually, if it doesn't get fed it becomes very upset.

With cocaine, there can be a dramatic "crash" when use stops, with much unpleasant anxiety, agitation, and depression, followed by prolonged sleep. The events that occur when a ketamine binge stops are rather different because of the high levels of norketamine, which take days to subside and may provide a gently deflating cushion. The way a person feels after a binge is influenced by the main thoughts and moods during the final phases of the experience. It is common to feel quite high, although forgetting house keys can put a damper on the exuberance. The high can sometimes sour by expressing itself as agitation and irritability, but actually feeling low is less common. Feeling low is more likely when there was a pre-existing depression, and the main thoughts during the experience and its aftermath were depressing. If a person feels high after a binge, a cocaine/amphetamine/MDMA-like swing into depression is rare. Users who crash on stopping are often clubbers who combine ketamine with amphetamine, cocaine and/or MDMA and its many relatives.

Some people feel that ketamine reduces the need for sleep without having to catch up later. This is also very different from cocaine. Ketamine induced electrical activity in the brain can be similar to some phases of normal sleep,[142–3] and some of the dramas may serve as a mental house-cleaning process, as in normal dreams. Others do feel the need to catch up on sleep, and a few fall asleep shortly after re-entry.

> I conducted an experiment for two weeks. At midnight every night I would inhale ketamine, roughly 80–100 mg. I would do this until 4 in the morning, at which time I was fully re-

freshed and on some days energized. I did not sleep for two weeks. After the experiment, I did not suffer any irregular sleep patterns. I was able to return to a normal sleep cycle right away.

**K.U.**

Like cocaine, after a period of recovery from a binge, craving can return. There is a high relapse rate after dry spells of less than 6 months. Sometimes just the sight of a syringe is enough to set off craving, or the sound of evocative music, or meeting up with old fellow travelers. A new cycle may begin, or the person may remain ketamine-free and enter the long-term clean-up state (about a year) during which urges to use slowly fade. The cues that once triggered craving gradually lose their power to do so if they are resisted.[449]

### "Psychedelic Heroin"

Ketamine causes a flood release of the body's own opioids, the beta-endorphins,[169, 333] and there is other evidence of direct and indirect effects on opioid receptors.[148–9, 160, 217, 227, 349, 468, 554] Despite giving rise to a rapid tolerance itself, ketamine can block the development of tolerance to, and physical dependence upon, many other drugs including heroin, alcohol, barbiturates, and benzodiazepines (diazepam, temazepam, *etc.*).[309–11] One of the means by which it achieves this remarkable feat involves blocking learning at N-P receptors. The physical brain may then not remember that it has met heroin and some other drugs before. Ketamine can also suppress withdrawal (cold turkey) in heroin addicts.[212, 326, 627] Oral ketamine given with morphine prevents the development of morphine tolerance,[178, 540] so this combination is sometimes used by chronic pain clinics.[127] This prevention of learning only works for certain drugs. For example, ketamine cannot block tolerance from developing rapidly at kappa opioid receptors (as distinct from mu and delta receptors to which heroin and morphine bind).[127, 212] This is very interesting because kappa sites are implicated





in the psychedelic effects of ketamine,[474] and it is particularly these effects that vanish rapidly when ketamine is taken repeatedly, while the cocaine/amphetamine-like effects become much greater.

There are no clear reports of a physical withdrawal syndrome from ketamine in humans that do not also involve other drugs. The heaviest users describe a variety of symptoms over the days following a binge, but it is difficult to say to what these are due. Some people are very twitchy and restless for several days. They have a poor attention span and poor concentration, impaired recall, a high mood and may be tense and jittery. These symptoms may be due to lingering norketamine (the metabolite) rather than a lack of ketamine, which is what the term "withdrawal syndrome" really means. We can use the term "discontinuation syndrome" for these effects instead. Many people do not notice anything because they take large amounts of other drugs such as *Cannabis* and alcohol that have a dampening effect. With ketamine, there is almost no evidence of a physical syndrome resembling withdrawal from opiates, barbiturates, or alcohol. Rats self-injecting large doses for prolonged periods had epileptic-type brain waves for up to 5 days after stopping, [383] but where ketamine is concerned there are very important differences between rats and humans that will be discussed later. The rats did not have actual fits. Others have reported the opposite effect (*i.e.* an anti-epileptic effect) after chronic ketamine injection.[355]

### Psychedelic Alcohol

Alcohol is also an indirect N-P receptor blocker, and it is thus not surprising that ketamine has some alcohol-like effects.[219, 337–8, 424, 629] This may explain the popularity of taking both drugs together amongst the "neck 'em, snort 'em, stack 'em, and go" end of the free party-going "ketamine crew," although the fact that both drugs are sometimes cheap in Europe is probably the main reason. The term "necking" means swallowing, and "stacking" refers to taking several drugs "stacked" on top of each other. The same core mechanism underlies

difficulty with coordination when affected by ketamine and when very drunk. This may also explain anecdotal observations that ketamine-dependent persons are at risk of progressing to alcohol dependence.

### Psychedelic *Cannabis*

Ketamine can influence *Cannabis* receptors indirectly, via its effects on N-P sites.[494, 566] Some ketamine effects are similar to those of *Cannabis*, including such odd effects as hunger. Most stimulants suppress hunger, but ketamine can have the opposite effect in veteran users. It is not so much a specific desire to eat that is felt as a drive towards sensual pleasure of all kinds. However, Moore noted an anorexic effect and declared that ketamine would be useful for weight control.[423]

### Conclusions

The reasons why ketamine can give rise to dependence are found at almost every level of the person. Recovery may also involve almost every level of the person. Recovery and treatment are the main topics of the next chapter.

> But the conversation doesn't end here with a fucked brain in a twisted New York City dance club—like Twilo, Sound Factory, Tunnel, and (sadly R.I.P) Arena/ JUNIOR*/a.k.a. "Palladium!!!" After extended and completely excessive abuse of all the aforementioned substances, (not to mention the ever-present ALCOHOL) I still reel at the absolute turmoil I went through weaning myself off of "K."
>
> **K.U.**



Chapter 7

# Escape From Planet K: The Treatment of Ketamine Dependence

*The power to cure always resides within the patient, and not in a particular doctor, treatment facility or medication.*[69]

**Deepak Chopra**
*Overcoming Addiction* (1997)

As with cocaine, most people who use large quantities of ketamine stop doing so on their own. The majority leave it behind in response to diminishing returns or resolution of the factors that were driving the compulsive use. However, where attempts to stop have repeatedly failed, there may be a need for extra help. Such help is most likely to succeed when it involves a multi-leveled approach combining mental, physical, social, and spiritual methods. Some of these methods can be applied to any compulsive behavior, including smoking and eating disorders.

Some theories of drug dependence appear to foster a sense of helplessness, such as theories involving an "addictive personality" and "addictive genes." They give the impression that the person is a helpless pawn, pushed around by forces over which they have no control. However, both the personality and the genetic factors inclining someone towards addiction can also incline them in positive, life-enhancing directions. There is no natural law that the needs of "addictive genes" must be met through drugs or harmful behavior. Individuals do have a degree of choice and control over their fate. It may not be possible to turn off the wind that blows the Autumn leaf, but some leaves learn to catch this wind like a sail, and use this energy to fly much further than the gutter. This chapter suggests methods by which such a feat may be achieved.

### Feel the Craving and Don't Do it Anyway

It is impossible to leap a chasm in two bounds, and in the same way a gradual reduction is not the best approach with ketamine. The best goal is usually abstinence from day one. The house should be completely cleared of all drugs including alcohol, and all syringes and needles, in one operation. An effective plan will often stress immediate abstinence, for a period, from all drugs, especially alcohol. The main reason for this is that most drugs, and alcohol in particular, have dis-inhibiting effects that make it very much harder to resist temptation. It is also because one drug problem can be replaced by another; other drug use (like cocaine) may have been linked with ketamine use and so brings it to mind; and it is usually better to identify and manage difficult feelings using non-drug methods while the problem resolves.

If a therapist is involved, the helper and the helped should discuss their respective goals for the therapy as these may not be the same. If the goals are not in agreement, then this matter should be resolved at an early stage. The therapist should usually avoid direct confrontation as the likelihood of the person dropping out is very high. The first objective is often simply to get the person to come back again.

Improving motivation for change can use facts from the person's life rather than the therapist's opinions or frightening research findings. For example: "Let's examine the effect your binges are having on your relationship with your partner/employer/friends/family; on your studies; on your use of sleeping pills and alcohol to come down; on your memory and ability to pay attention; on your productivity," and so on. This begins to make clear the person's ambivalence about change.

### Ambivalence: To Use or Not to Use, That is the Question...

The person may find it useful to list all of the good things about taking ketamine. What is the very most they think they could gain from it? Then they should list all of the bad things and the costs. What is the very most they think they could lose? These lists can be divided





into short-term and long-term. They can be invited to consider which list looks more attractive and life-enhancing. The helper is only asking questions here, not lecturing. The person might go through these questions and make a note of answers to have look at when a relapse is looming. It is useful to appreciate the difference between pleasure (which is usually more short-term, involving immediate gratification) and happiness (which may be more long-term, and may require some delay in gratification). The following questions are adapted for our purposes from a technique called "motivational interviewing:"[414]

What Has it Cost You?
What are the costs of taking ketamine excessively?
What difficulties have resulted?
How has taking the drug stopped you from doing the things that you want to do?
What were you like before you starting taking it frequently?
How have you changed?
How has doing ketamine all the time stopped you from moving ahead?
How have you been harmed?
How have other people been harmed?

Understand Your Concerns:
What is there about your behavior that you see as a cause for concern?
What do others see as a cause for concern?
What do you think might happen in the end?
What is the worst possible outcome?
What worries you the most?

Commit to Change:
Why might you need to stop using ketamine?
If you stopped completely, how would things be different?

How would you like things to go?
What are the good things that would come with stopping?
What would you miss?
What encourages you to think that you can change if you wish?
What might go wrong with the plan?

### Stop the World! — I Want to Get Back On...

Key values can be written on cards or pieces of paper, one per card. The person then arranges these in order of priority. They can write "using ketamine" on a card and insert it at its proper place in the line-up, amongst the other key values. This is repeated with key goals, which are sometimes the same as values, sometimes not. When trying to find motivation, they can recall the gap between their goals, which is where they want to be, and where they actually are right now. How will they feel if they never attain these goals? Is taking ketamine going to help or hinder them in attaining these goals?

### Alternative Joys and Pleasures

The development of alternative joys and pleasures is very important, and should not be neglected or lightly passed over. As noted by Deepak Chopra, the color, magic, ecstasy, escape, euphoria, and stimulation of the drug may need to be replaced with non-drug sources of color, magic, ecstasy, escape, euphoria, and stimulation[69]—unless fundamental and deep changes can be made which reduce these needs at their source. A journey of discovery and re-discovery may be needed, uncovering the pleasurable activities of the past as far back as those of childhood. Moments of joy can be considered in detail. How did everything look? Sound? Smell? Feel? Touch? What sort of thoughts and feelings were involved? It is often valuable to remember being in love, and experiencing a sense of the sacred without drugs. How might it be possible to re-create such moments in the present? An alternative source of satisfaction can also include immersion in work and creative





projects, although over-working can also become a harmful habit.

### Denial

For the helper, confrontation of denial is rarely the first priority. The first priority is to continue the contact. If the person is challenged too vigorously, they will flee never to be seen again—or at least, not until the next crisis. The value of over-coming denial is often doubtful anyway. Some people believe that they are on the road to recovery when they can tell everyone what a big problem they have. Unfortunately, there is surprisingly little connection between being able to proclaim yourself devoid of self-control, and recovering control. Some of those who are happy to tell everyone about their problem are still talking about it several years later, and still have the problem.[414]

### Dogs in Space

Relapse prevention involves learning what kind of situations and triggers occur before taking the steps that result in a relapse (identifying the danger signs).[389] Alternative responses can then be developed. The places, people, objects, and events linked with ketamine use can become unconscious cues for craving,[449] like Pavlov's dogs who learned to salivate at the sound of a bell alone, after the bell was repeatedly rung whenever a piece of steak appeared:

> I used to work as a nurse in hospitals and would nick Ketalar® from the recovery room. There is usually an open room near the operating theatres where they keep the anesthetics on shelves, a kind of mini-pharmacy. It's often completely deserted. I would go over to the nurse's home and do it. I soon had a really raging problem with it. I stopped doing hospital work and also stopped doing Ketalar®. Then one day I walked into the lift at the hospital and it was amazing. I immediately wanted to do some although I'd sworn not to touch it again. I resisted the urge. Several months later I went into the hospital

again on some other business and was immediately hit by the urge. This time I gave in. The result wasn't a slip—it was a bloody landslide. It wasn't until a few years later that I realized being in the hospital had set off the urge. You don't think that way at the time. The craving just comes at you out of thin air.

**K.U.**

If a particular piece of music was often played on taking ketamine, eventually hearing that music might produce a craving for the drug. These hidden triggers should be uncovered so that they can be avoided or dealt with. They will eventually lose their evocative power. It is helpful to discover the things other people do, or don't do, which make it easier to give in to impulses to use drugs or to resist such impulses. Other active users should definitely be avoided.

Keeping a diary can be useful to uncover hidden triggers that result in craving. Keeping track of the details of use is also valuable: when, where, why, how much, and feelings at the time. For those who never find time to keep a diary, or if they are seen as incriminating evidence, a little tape recorder can be the answer. This is easier than writing, and provokes less resistance. Some people may be startled to discover how split they really are, as they listen to the different selves on the tape over several months. If this is also too much, a simple cross on a wall calendar can mark the dates on which the drug was used.

### The Flat Spot

A slough of despond in long-term recovery may occur at 6–12 weeks. The person may have trouble deriving pleasure from their usual activities, an inability to gain enjoyment from ordinary things, and unpleasant feelings of emptiness that can be potent causes of relapse. Another watershed occurs at about 6 months, when everything seems drab and flat and it may seem as if only ketamine can switch the psychic TV back from black-and-white to color.





Yes, I preferred the discontented doctor, surrounded by friends, and cherishing honest hopes; and paid a resolute farewell to the liberty, leaping pulses and secret pleasures I had enjoyed in the guise of Hyde. I made this choice perhaps with some unconscious reservation, for I neither gave up the house in Soho, nor destroyed the clothes of Edward Hyde…For two months, however, I was true to my determination. I led a life of such severity as I had never before attained to, and enjoyed the compensations of an approving conscience. But time began at last to obliterate the freshness of my alarm …I began to be tortured with throes and longings…and at last, in an hour of moral weakness, I once again compounded and swallowed the transforming draught…My devil had long been caged, he came out roaring.[568]

**Robert Louis Stevenson**
*Dr. Jekyll and Mr. Hyde* (1886)

To "escape from universe K," it is definitely necessary to metaphorically give up the house in Soho and to destroy the clothes of Edward Hyde. Once the relationship with a drug is ruined it tends to stay ruined, and dreams of re-establishing normal relations after some marital counseling are almost always an illusion.

### On the Couch

I do not understand my own actions. For I do not do what I want, but I do the very thing I hate.

**Romans 7:15**, Revised Standard Version

Some people believe that understanding the roots of their actions will lead to greater self-control. However, raking over old traumas in a difficult session can actually increase drug use or trigger a relapse, and understanding does not always lead to greater control. Many have

spent a great deal of time and money on analysis only to end up saying: "I now understand my own actions (maybe), but I still do not do what I want and I still do the very thing I hate!" This type of therapy is best left until abstinence is very firmly established. There are some who believe that a formal analysis can then provide the dream space to explore certain inner realms. Barbara Wallace has written a valuable account of analytical approaches to stimulant dependence, focusing on the split in the self,[610] and provides a valuable summary of more primary sources.[318–9] Other forms of "talking therapy" may also be useful, but once again they are often best left until abstinence is firmly established.

### Transpersonal and Other Therapies

These include 12-step programs, joining a spiritual school or religion, and therapies that address birth and transpersonal issues.[623] The person is most likely to engage with a group composed of people similar to themselves. If they feel very different from other members of the group, they will usually not remain for long regardless of admonitions that we are all one and the same. Many of those at an average branch of Narcotics Anonymous (N.A.) will know almost nothing about ketamine.

Acupuncture and various forms of bodywork including shiatsu and aromatherapy can shift the focus away from drugs, induce relaxation, and aid contact with suppressed parts of the self.[367]

### Exercise

Physical exercise can improve a sense of mastery, reducing stress while rebuilding the body. Exercise can be a good time filler and involves a change of environment. The release of endorphins and other natural substances may also have value, and there is evidence that exercise can have anti-depressant effects. Most types of exercise will be helpful, preferably taking place on a regular (hopefully daily) basis. Resistance to getting started can be overcome with a gentle beginning





such as walking in pleasant settings. Walking requires no training, no gear, no fees, no gyms, and the risk of injury is slight. Those with a serious, consuming problem and high stimulus needs may find it profitable to consider martial arts such as karate. Martial arts encourage self-control, and are a form of bodywork sometimes said to activate "energy centers" outside the head. Karate involves breathing and exercises focused around the belly button. This may be a valuable part of "reconnecting," demands a major life-style shift, and can lead to some interesting states of being after several years of practice.

### Medication

Some people may have been using drugs to self-medicate an underlying problem such as depression, mood swings (there are those who are more likely to use drugs when they are feeling high rather than when they are feeling low), anxiety or psychosis (insanity, "madness," paranoia, "hearing voices"). These should be treated with the usual medicines and therapies for that disorder.

This is some evidence that withdrawing from stimulant-like drugs is eased by the use of anti-depressants such as desipramine[584, 610] and tryptophan,[61, 282, 284, 555] or anxiety-relieving agents such as diazepam (Valium®),[175, 476] but this evidence often comes from rat rather than human studies. The links between alcohol and ketamine actions in the brain suggest that a drug used to reduce craving for alcohol, acamprosate, may also reduce craving for ketamine.[334, 516] Research into ketamine dependence is in its infancy and none of these ideas have been put to the test as yet.

Problems with using medication to "treat" drug dependence include: possible lack of effectiveness, unpleasant side-effects, reinforcing the use of chemicals to deal with difficult feelings, placing the locus of control outside the person rather than inside, provision of the means for a suicide attempt (depending on what the doctor chooses to prescribe), dependence on the medicine, and an unfortunate effect which medicines may have on the prescriber in this situation: giving

the client a prescription and some low-level supportive counseling may lead to neglect of all the other approaches outlined here, which often involve greater time and effort to put structures in place of more lasting value.

### Food, Supplements, Vitamins, and Minerals

The brain can make serotonin out of tryptophan in the diet, and higher levels of serotonin have been claimed to reduce depression, anxiety, insomnia, and craving.[61] However, tryptophan is closely regulated in some countries due to a contaminated batch. Pineapple, banana, turkey, chicken, yogurt, unripened cheese, and chocolate are rich sources. Combining these foods with pastas, cereals, or bread may enhance absorption of the tryptophan into the brain. It is also possible to obtain a product called 5-HTP. This is actually one step closer to serotonin. Tryptophan supplements are not recommended in pregnant women, asthmatics, or people with autoimmune conditions.

Piracetam (Nootropil®) has been claimed by some users to reverse the negative effects of ketamine on memory, attention, and general intelligence. This observation is supported by animal studies. Treatment of aged mice with piracetam improved mental function via a dramatic effect on the N-P receptor density and glutamate system.[74] Piracetam is not sold in the USA, but it can be bought via mail-order for personal use from a number of other countries.

Those who wish to take an anti-depressant but are determined to avoid the doctor's office may purchase St. John's wort (*Hypericum perforatum*) over-the-counter. This is as effective an anti-depressant as imipramine and does not require a prescription. The dose is 350 mg three times daily. However, it usually is a good idea to visit the doctor's office, as part of a multi-leveled approach to getting well, and reasons for not doing do should be carefully examined to see what lies beneath them. If the doctor is unpleasant or unsuitable, the potential patient should sometimes find a different doctor rather than avoiding conventional medicine altogether.





Both users and those in recovery should drink substantial quantities of clean water, eat a healthy diet, and clearly distinguish night from day in terms of their activities. Irregular/missed meals may result in hunger which can trigger craving, and high sugar, nicotine, caffeine, and fast food intake can result in mood instability and fatigue, which increase the risk of a relapse.

Making an effort to be healthy can reduce the risk of a relapse by showing to one part of the mind the commitment of other parts of the self towards life. The actual physical benefits of taking certain vitamins, herbs, and food supplements are sometimes debated, but the mental message of doing so is positive because the act is believed to be positive. So even as a "symbolic" act without the unequivocal medical evidence to back up the claims, the following actions may be worthwhile: avoiding animal fat, highly-processed foods, nicotine, and excessive amounts of caffeine; increasing the intake of raw and/or steamed vegetables, fruits, nuts, seeds, olive oil, salmon, mackerel and sardines; daily supplements of vitamin B, C, E, evening primrose oil, flax seed oil, and a multimineral pill.

There are theoretical grounds to believe that magnesium may reduce the craving for ketamine,[118, 458] but this idea has yet to be put to the test. Magnesium provides some indirect blockade of N-P receptors. Some people find that large doses of vitamin C are helpful in reducing compulsiveness. However, the safety of doses higher than 500 mg per day is controversial. Vitamin C should be taken together with bioflavinoids (they are often sold together now). Some heavy users have found higher doses of vitamin B6 useful in recovery, but again there may be safety issues at these dose levels.

It can be helpful to improve sleep by obtaining the most comfortable bed, mattress, and pillows available, and also black-out curtains or blinds. Those who have sleep difficulties may find it useful to note that it can take over an hour for caffeine to reach its peak level in blood and 8 hours for the amount to fall by half. Caffeine is the root cause of many cases of insomnia and excessive nervous tension.

### Testing

Urine testing has a negative image due to its enforced use in those who are not in any treatment program and who do not wish to be tested. Nevertheless, testing can help those in therapy to resist impulses to use and then hide this use from the helper, which tends to devalue the therapy. Testing can also provide a measure of progress and be used to re-assure others (such as professional bodies) about this progress. It detects norketamine, which may be excreted for 7–14 days and sometimes far longer.[181–2] If there are slips, the helper might focus on what led up to this and what should change to avoid further slips. Hair testing is also possible but very few labs are currently set up for this.[164] It is usually not worth the expense unless special circumstances exist.

### Meditation and the Interior Journey

Meditation can be at the core of any program. There is no need to join a group or to have a teacher of any kind, and no special mantras, gurus or religious beliefs are required. There is no need to part with any money or to say strange words in strange languages, although colorful rituals can be fun and life-enhancing, and the fact that there is no absolute need for these things does not mean that they should be avoided.

Many healers have published useful methods. The procedure below is a general-purpose mixture, with the main influences being Australian psychiatrist Ainslie Meares, author of *Relief Without Drugs*, and Lawrence Le Shan's *How to Meditate*.[358] Different approaches work for different people, but there seems to be a general agreement that the best results come from meditating every day, twice a day, for about 20 minutes per session, trying never to miss a day. If necessary, almost anyone can get up 20 minutes earlier and go to bed 20 minutes later. The time is always there. Missing a session is often hidden resistance to becoming well (regardless of the "perfectly valid" excuses), and an early step on the road back to relapse. It is usually best to be inflexible





about meditation sessions.

The sessions are often best done sitting in a straight-backed chair in a quiet room, free from interruptions. They should not be done immediately after eating. It is usually best to have a straight back, feet flat on the ground, with tight belts or clothing loosened. Hands are placed in the lap, one inside the other, with eyes lightly closed. Breathing is in through the nose and out through the mouth. The process starts with 5 long breaths in, and 5 long breaths out, thinking, "I am…(on the in breath) relaxed" (on the out breath). Attention is then moved to the right big toe, actually feeling where toe touches shoe. This sensation is always there, but normally we don't pay attention to it. Think: "My toe is completely relaxed and moving away from me," and try to actually feel it doing that. Repeat this with the other toes and then feel the wave of relaxation moving back through the instep into the heel. Actually feel where it is pressing down on the floor. Feel the wave spreading up the calf into the knee, and on up through the thigh into the right buttock. Feel the weight of the body pressing down. The focus of awareness then shifts to the groin. Feel the muscles in this area let go.

Now move your mind to your left big toe and go through this process again, ending at the pelvis. The relaxation is then felt to move up as a circle around the whole trunk, until it reaches the right shoulder. Put your mind in your shoulder and feel it relax. Feel the wave move down into your elbow, forearm, and hand.

Move the mind to the left shoulder and repeat the above until you have relaxed your left hand. Move the focus to the area where your neck joins your body. Imagine a circle around the bottom of your neck. Your whole body below this feels relaxed. Really feel it with your mind. Feel your whole body below the neck letting go and moving away from you as you breathe out. Now feel the relaxation move up your neck and into your jaw. It starts on the right side and moves across to the left, same for lower teeth, upper teeth, lower lip, upper lip, and cheekbones. Feel the muscles around your eyes relax, and your brow. Now feel the pressure of the relaxation in your right temple, as if someone were pressing a finger in there. Then on the left side.

Now, as you breathe out, think: "I am totally relaxed."

This is the relaxation part of the twice-daily interior journey. The meditation part involves emptying the mind for a period by learning to attend to a single stimulus without allowing the attention to wander. For example, the word "one" can be said in the mind with each outward breath, while trying to think of nothing else and ignoring distractions. If other thoughts come in, let them go out again without giving them any energy. You are just paying attention—making sure that the mind doesn't wander. Do this for a few minutes to empty your mind.

The benefits of an empty mind for its own sake are limited. In overcoming compulsions, an empty meditative mind is a preparation for the final part of the sessions: affirmation and creative visualization. An affirmation (or "auto-suggestion") is when you say to yourself that something is so, not that it will be so, or that you want it to be so. This seems to be more effective at re-programming the mind. Affirmations appear to be more successful when they are positive, affirming what is wanted rather than what is not wanted, and are best kept short, simple, and strong. Half a sentence is thought on breathing in, the rest of the sentence on breathing out. People can invent their own to fit their needs. Here are two examples: My appetites / are fully satisfied; I am open / to the beauty of life. These should be repeated at least ten times. Constant repetition makes it more likely that the message will penetrate to the deeper levels. Affirmations can also be repeated before falling asleep and on waking, and during difficult moments.

Imagination is sometimes more powerful than the will. Auto-suggestions may be more successful if made effortlessly, without involvement of the will. Thus affirmations are made at the end of a long relaxation exercise. Gritting teeth, clenching fists and saying "never again!" appears to be linked with a high rate of relapse. The attitude of mind indicated by clenched fists may increase the risk of heart attacks, ulcers, and unpleasant interpersonal habits. Those who wish to overcome compulsive drug use by thinking "Triumph of the Will,"





should bear in mind what happened to the Nazis. This was the title of Hitler's propaganda film. FBI agent G. Gordon Lilly, who wrote a book called *Will*, was later imprisoned for his role in the Watergate scandal and ended up on the college lecture circuit with his old nemesis, Timothy Leary, as part of a cops 'n' robbers, yin-yang stage act.

### Creative Visualization and the Higher Self

Creative visualization is the next step in a session. This involves forming clear visual images in the mind. Imagining positive outcomes may make it more likely that the necessary behaviors will happen to bring them about, another form of do-it-yourself reprogramming. Imagining the impossible brings disappointment and an early loss of faith in the technique. A person will not grow two heads by visualizing them, but they become happier if they consistently visualize themselves as happy and free from compulsive behavior.

I am going to use the term *higher self* to mean an archetype or blueprint of the person that is always present. This concept is not as far from conventional psychology as first glance may suggest. Freud's *id*, the source of dark and uncontrolled desires, is said to be unaffected by the *ego*, timeless and ever present but without a voice of its own. We could almost say that the id was the mirror image of the higher self. In this scheme, the *super-ego* or conscience is quite different, being little more than some internalized rules resulting from experience and local customs, and the guilt that may result after breaking these rules.

Some of those who complain of feeling empty may have become divorced from the higher self aspect of their psyche, which is sometimes said to give life its meaning. It is possible that some frequent drug users are making an unconscious attempt to re-establish contact with this "lost" part. There are those who declare that that they are nothing more than their egos, as did Descartes whose phrase *cogito ergo sum* implies that there is no aspect to the person other than thinking, and disregards the many other layers of the self. A feeling of

having "lost the way" can result from the disappearance of any sense of meaning, sacredness, or the spiritual. The person may then feel that there is something missing inside that must be provided from the outside. This can lead to driven behavior oriented towards providing external things (such as climbing career ladders), compulsive drug taking (including alcohol), or (for example) a compulsive sexual focus with multiple partners. Some people will move around this triangle, from point to point, attempting to distract themselves from unpleasant feelings within.

The "overwork option" is increasingly sanctioned by society although older cultures understood this as another evil. The Old Testament demanded severe punishment for working on the Sabbath, which was the day for honoring the spirit (in other words the connection of one's ego to everything else), and the debt owed by that ego to the rest of creation that supports it. One problem with the overwork option is that attaining external things may not remedy the feelings of inner emptiness, as the loss of contact with the higher self persists. There may also be damage to health and relationships. Some people arrive at the destination for which they strived only to feel more than ever that they have lost the way, and they may go suddenly and dramatically "into the light" by having a heart attack. Some wealthy, promiscuous, drug-soaked people still feel the need to directly or indirectly kill themselves. These are important issues to consider when making a list of goals.

One view is that "excessive penetration by outside forces" in childhood is a possible means by which different parts of the self became separated from each other. This "penetration" is often by words. In this particular model, a child is seen as being born with an inner archetype of self. "Outside forces" (parents, school, society, *etc.*) may then fill the child with their ideas about who that child is. In some cases, this may trigger a process of separation from the "true self," especially if these outside forces are strident, loud, manipulative, heavily opinionated, and determined to win the child to their cause. The ego, the part interacting with the external world, may eventually find itself





in the metaphorical equivalent of a strange walled city far from home, wearing foreign clothes, and living under an assumed name. Alienation in the outer world may be a reflection of alienation from parts of the self within. The more extensive the penetration by others has been, the greater will be the problems with selfhood. The above refers only to a developmental process in childhood of which the child is not consciously aware. It does not embrace the psychotic phenomena seen in schizophrenia of believing that one is controlled by outside forces, although there is still a substantial body of psychiatrists who have not accepted the "100% organic" explanation for all schizophrenia, and who would be prepared to give some credence to psychological theories for serious disintegration of the self.

Sometimes excessive appetites, including problematic use of food (eating disorders), alcohol, cigarettes, and other drugs, are an expression of hatred for the persona that is the end result of this process. This hatred can also lead to illness in the body, living unhappily and in disorder, creating burdens and torments, and attracting other people around us who diminish our happiness rather than increase it. "Persona-hatred" is often a better term than "self-hatred." Those who say that they hate themselves may have only a limited knowledge of who they actually are. Curing persona-hatred may sometimes require a form of re-alignment with the higher self.

### Going Further In With Guided Imagery

When the affirmations are completed and the person has visualized themselves as happy, healthy, and free from compulsions, they can start to visualize an "inner sanctuary." This is a personalized, visual image of a sacred area. Within its boundaries there is safety, relaxation, and tranquility. A common mythic image is that of the secluded garden or orchard with a fountain, but some people prefer a mountain fortress or some other heavily secure image. The fountain can be seen as flowing with the "essence of pure self," from which a goblet can be filled and drunk like a religious sacrament. The liquid can be

seen in the imagination as running to every part of the mind and body, bringing "cleansing" and a sense of purification.[167]

In some ways, visiting an inner sanctuary may satisfy both the life and the death drives together and improves integration. This place can be a symbol for the "mythic womb" in which there is both a retreat from life and a preparation for "rebirth" into what may be a happier existence. The haven described above has some Eden-like qualities. There are symbolic parallels with some of the effects of psychedelic drugs, which is why an emphasis is placed on these unconventional methods here. They may be more likely to strike a chord with heavy ketamine users, who often have an "alternative spirituality" perspective that has a generally ambivalent view of conventional medicine, and psychiatry in particular.

As discussed here, compulsive drug use sometimes feeds on persona-hate and low self-esteem. It may also feed on hatred of others. It is sometimes said that to err is human, to forgive divine. Forgiveness may be described as "divine" because it can re-connect the ego with other people and the wider universe, and may partially restore a sense of the oneness of being. The final stage of the daily session is thus forgiving those who have apparently "trespassed against us," and fostering a sense of goodwill towards the universe in general. Thinking about others and the outside world is an important part of increasing connectedness, and is often a positive step towards mental well-being. The person can imagine that they are sending out a "field" radiating to the "fields" of other people, animals, plants, the planet, and the universe. The Buddhist meditation on loving-kindness may be helpful.[614] Ideas about "fields" are not helpful in persons with psychosis, who are best treated with medicines.

### Quantum Therapy

Quantum therapy describes a therapeutic approach that is still being developed. There are links with Deepak Chopra's *Quantum Healing*[68] but the two are not the same. Quantum healing refers mainly





to spontaneous cures for physical illness such as cancer, which are said to involve a sudden jump from one reality to another, mirroring the quantum leap of an electron to a different level. Quantum therapy is focused more on mental well-being, and involves a wide range of metaphors from the new physics with a particular emphasis on the wave-particle principle of complementarity. The whole person is seen as a particle with a location, and a wave with momentum, simultaneously.

This view has some implications for achieving balance and integration of opposing elements in the psyche. Sometimes there is too much "particle," for example when a person is "frozen" with shock, hurt, anger, hate, and resentment. Healing and letting go of negative emotions may involve "melting," which itself involves an image of motion: the wave. One of the means for achieving this is through the practice of forgiveness discussed above. Thus the forgiveness is practiced for the benefit of the person doing the forgiving, rather than out of altruism.

A person can also become far too wave-like and lose their solidity and their boundaries. Appropriate boundaries are important for a healthy psyche, inter-personal relationships, and successful existence in the community. It is very important to know where you end and someone else begins. Here is one view on the importance of sometimes being a separate particle:

> Beware of the Hindu trap…The guru, god, and the swami universe is a soft, sweet custard mush. Undifferentiated unity. True unity is contacted through increasing precision of distinctions…[351]
>
> **Timothy Leary**
> *Neuropolitics* (1977)

Those who doubt that so-called "New Age" methods (many are actually thousands of years old) can be useful for treating drug dependence should note that ketamine, in particular, often raises spiritual questions in the minds of those who take it, and has profound effects

on the psyche that are not seen with heroin, amphetamine, cocaine and alcohol. Those who spend a couple of 20-minute sessions per day going through the "interior trip" of meditation may do better than clients who are given Prozac and a low-level fortnightly chat, although this prediction has yet to be tested in clinical trials.

Many people will find their resistance to doing two full sessions each day insurmountable. In that case, the aims should be gradually lowered until a level is found which the person is able to do, even if this is only sitting still for 5 minutes every day paying attention to breathing. Many will have to start with a couple of 10-minute sessions and build up slowly from there. A compromise is very much better than an all-or-nothing approach, which frequently results in nothing. Those who cannot sit for 20 minutes should sit for 10, if not 10 then 5, and take it from there rather than not trying this method at all.

### Going Further Up and Further In Without Drugs

> I've been doing K for over a year now. My only problem is the world where time, space, and thought are all one: death. I like it too much. I want to evolve as a being, as a consciousness to exist in that world, without chemicals, because every time I am submersed in the end of the Universe and I can travel by thought, and I have no form, just pure thought, and within my thoughts anything is possible, I come back here. To Earth. The K wears off and I have to take the train to go to work or school and I hate it. At this point in time my life is very difficult because I have experienced so many endless possibilities in the K-hole and now I am trapped in this one and only material possibility. Do you see my problem? How can I access the K-hole forever? And without K? Am I just dreaming? I do good acts and believe in karma in the hopes that one day that world will be waiting for me, but for now I'm here.
>
> **K.U.**





A spiritual quest is sometimes about transcendence of the everyday in search of something within that is always there, although our egos may have lost sight of it. Problems may arise when a person becomes enslaved by the method used to seek transcendence, such as certain religions, or when he or she uses potentially harmful methods to transcend. Many ketamine users will already believe that the further into their minds they go, the more space there appears to be, until a perception of infinity is reached in the innermost regions. There are other ways of making this "inward journey," such as the meditation described above. Flotation tanks are another possibility, and are now widely available. Some ideas for drug-free exploring can be found in: *Mind Games: The Guide to Inner Space* by Masters and Houston.[394]

An ancient technique is lucid dreaming. There are now many books and courses about developing this skill, and various types of "dream machines" to aid the process.[204] The key factors include a conscious desire to have lucid dreams, keeping certain images in the mind while falling asleep, and keeping a dream diary. Even an ordinary dream can provide many people with a sense that there is more to life and "reality" than meets the waking eye.

Chapter 8

# Journeys into the Fright World: Ketamine and Mental Health

*Facts never speak for themselves, but at are at the mercy of their interpreters.*

**Ashley Montagu**
*The Dolphin in History* (1963)

The use of ketamine has been linked with a wide range of unpleasant mental effects. The list includes: anxiety, panic attacks, flashbacks, post-traumatic stress disorder, persistent perceptual changes, mania, depression, suicide, insomnia, nightmares, night terrors, an unpleasant feeling of being unreal or that the world is unreal, paranoia and other false beliefs that overvalue one's role in the scheme of things (grandiose delusions), persistent hallucinations, automatic behavior, fragmentation of the personality, aggression, and "spiritual emergencies."[196] This catalog of distress is quite similar to that reported for MDMA[250, 253, 256–7, 262, 264, 286, 397, 403]

Widespread use of radically different stimulants can lead to similar lists of reported side-effects, even if the drugs are as different as MDMA and ketamine. This is partly because of a shared *psychology of adverse drug effects*, which has more to do with the mind of the sufferer than with the actual physical effects of that drug upon the brain. When widespread use of a drug results in such a huge "mental health" problem list covering a large section of adult psychiatry, as happened with LSD and MDMA, we may just be seeing the illness that usually exists in the population rather than specific drug effects. The link with drug taking may be coincidental. The user is casting about for an understandable cause for their problem, and mind-altering drugs are a popular choice. Sometimes people suffering from psychosis, who have never taken drugs in their lives, insist that their drinks were spiked, rather than accept the possibility that something unexplainable, and possibly uncontrollable, suddenly went wrong inside of them. This is also a





way of avoiding the stigma still attached to some forms of psychiatric disorder. A favorite "root of all evil" in this sense was once a knock on the head in childhood. This is still quite popular. In Victorian times, it was traveling on the railways, riding bicycles, and masturbation, amongst others. Large compensation payments were made for non-existent conditions such as "railway spine," articles in the *British Medical Journal* trumpeted against the evils of the bicycle, and alarms were sold which aimed to alert parents to any masturbatory activity by their sons.

It is also true that some real problems will be shared between MDMA and ketamine on the basis of actual, shared physical effects such as a raised dopamine level.[291] For example, this is thought to be involved in paranoia.[625] However, this shared effect is not enough to explain either the extent of the overlap in the reports, or their all-embracing variety. It is to the mind of the user, as well as the brain, that we must sometimes look.

> It is important to recognize that, among the large group of drug users within the general population, a proportion will become mentally ill regardless of any supposed psychotomimetic properties of drugs.[479]
>
> **Richard Poole** & **Clare Brabbins**
> "Drug Induced Psychosis," *British Journal of Psychiatry* (1996)

## Pandora's Box

Freud suggested that anxiety-provoking material unacceptable to the waking, aware mind is repressed into the unconscious. However, this material may indicate its presence via dreams and other messages. Freud believed that the major themes of this material are related to sex and aggression, such as wanting to murder one parent and have sex with the other, and that psychic defenses are erected against it. Some therapies involve bringing hidden issues to the surface so that they can be "worked through" and hopefully discharged. Grof sug-

gested that some of the most frightening material may not arise from family matters, but may actually have a deeper origin in the birth trauma and "beyond," arising from the "eternity" sometimes said to lie at the core of being.[198] Matters that allegedly arise from "realms beyond space-time" can be called "quantum issues" while the classical sex/aggression themes are known as "psychodynamic issues."

MDMA and ketamine have both been used to remove blocks and defenses for therapeutic reasons[187, 312, 518–9, 331–4, 541] If defenses against disturbing material in the psyche are removed in a non-therapeutic context, the outcome will partly depend on the set and setting. While no lasting harm may result, and the defenses may rebuild themselves as the drug wears off, it is also possible that some of the liberated material cannot be "pushed back in." This may lead to symptoms such as anxiety, nightmares, phobias, low mood, suicidal ideas, and other problems.

### Weighing the Evidence

There are over three decades of studies concerning the effects of ketamine, but these are almost entirely for its use in medicine or science. Club culture will produce a different picture, arising from personal accounts, interviews, and case reports. There are several potential traps in drawing conclusions from these reports. One of these is to ignore the role of other drugs in producing the problem, automatically assuming that the cause will be whatever drug is currently giving rise to anxiety in the media, if the person also happens to have taken that drug, or believes they have. In *Ecstasy Reconsidered*, I wrote:

> There has been increasing attention given to ketamine in the media recently, and it will be of interest to observe whether eventually case reports will appear associating mental illness with ketamine use, while Ecstasy is relegated to the "other drugs taken" list in the fine print at the bottom, warranting no further discussion.[250]





I was referring to the attribution of symptoms to the media devil-drug of the moment, which was MDMA at that time, ignoring any role played by the other drugs a person had taken. I predicted that this mistake would be made again with ketamine, as it became more popular and moved towards the title of "media devil-drug" for a period. This is partly due to a "psychology of negative drug effects reporting" in the minds of some media-influenced doctors as well as the patient. A skim through the journals of the last 200 years shows that doctors can be as swayed by fashion as anyone else.

The increase in ketamine use has occurred mainly in clubs where people use a variety of drugs. This point is rarely made in stories attributing a problem to ketamine, where other drug use is dismissed in a few lines even though it may include the usual suspects: alcohol, LSD, MDMA, cocaine, *Cannabis,* and amphetamine. Even with a major user such as John Lilly it is important to consider the whole picture. Lilly had prolonged bouts of intense cocaine use, and is alleged to have harmed himself while exploring Freud's ideas about cocaine and sex. His alcohol intake has been significant, and he told me that he had taken LSD in the tank about 500 times. Before Lilly ever took ketamine, he injected himself with LSD in a hotel room without having removed all the soap from the syringe. A soap bubble lodged in an artery supplying the part of his brain responsible for sight. He was in hospital, blind, for three days and has a small but lasting visual defect.[362] He told me that his use of amphetamine predated his ketamine use.

Sensationalist and often misleading media reports play an important role in the "psychology of negative drug effects reporting." The social histories of LSD and MDMA have implications for ketamine's future as a media devil-drug. In the 1960s, taking LSD in unsafe settings led to rare accidents that were widely reported in the media, such as people falling out of windows. A single event could run in the press for months, creating a distortion in the public mind about the actual level of risk. The real risk is the number of accidents relative to the total number of doses taken by the whole population. This calcu-

lation shows that the vast majority of doses taken did not have serious results. The risk was extremely low compared to inhaling solvents ("sniffing glue") for example, which has a very high accidental death rate relative to the number of persons involved.[528] Another media theme that was disproven was that LSD could damage chromosomes. This belief was laid to rest in 1971, in the prestigious journal *Science*.[110]

It is now widely accepted that LSD is unremarkable in terms of its effects on the body. The profound mental effects had led to a "common sense" expectation that LSD must damage the brain. However, repeated injection of huge amounts into animals had no lasting impact upon brain hardware.[193] This is in marked contrast to repeated MDMA injections, which have been found to cause specific lasting changes.[230, 495]

The extent to which a drug can alter the mind is not linked in any way with the likelihood that the drug will cause physical damage: the common sense intuition is wrong. In fact, there is almost an inverse relationship between physical harm and psychoactive effect amongst the pleasure drugs. Cigarettes, which have only weak mental effects, are amongst the most physically harmful while LSD and ketamine, which produce profoundly altered states of being, have the least lasting effects upon the human body. Altered states of being do not imply physical harm. The dreams we have every night can be profoundly altered states of being that are essential to health. In Britain, LSD has been linked with no more than 1 death per year, on average, for the last 10 years (versus 115,000 deaths per year from smoking).[528] Rat brains and ketamine are a special case that will be discussed later in this chapter.

Another "misleading media" LSD issue was that of flashbacks. These no longer seem to be common despite intense media interest in them in the past, and high levels of LSD use in the present. The U.K. government official report for 1998 noted that a staggering 10% of people under 30 had taken LSD.[482, 168] Despite this high figure, the drug has largely vanished from the pages of medical journals and the tabloids.[285] Most doctors are now unlikely to see many cases of true LSD-induced





problems that are not in fact an acute stress reaction or a post-traumatic stress disorder (PTSD) following a traumatic LSD experience, alcoholic hallucinosis, hysteria (*i.e.* a dissociative or somatoform condition), schizophrenia, manic-depression (bipolar disorder), personality disorder, or due to ongoing use of other drugs. While LSD can produce dramatic mental changes while a person is affected by the drug, the evidence that a single dose can of itself cause lasting, serious psychiatric damage in a previously normal individual with no family history of mental illness is not strong.[479, 572] Doctors in the 1960s and 1970s were as influenced by the media as the public, and often diagnosed conditions as LSD-induced when they were actually dealing with something entirely different.

The 1990s saw more realistic attitudes developing towards LSD. Strassman was licensed to do human research with psychedelic drugs at the University of New Mexico.[574–7] The 1993 symposium held in Switzerland, *50 Years of LSD*, was sponsored by the Swiss Academy of Medical Sciences and was attended by many respected doctors.[477] In London, the LSD sentencing guidelines were changed in 1997 (in the Court of the Lord Chief Justice of England) so that doses containing under 50 micrograms would be sentenced on guidelines closer to those for Class B (Schedule II) drugs rather than Class A (Schedule I) drugs (*R v. Hurley*). LSD doses now often contain less than 50 micrograms.

However, the 1990s also saw a remarkable re-run of 1960s-style media hysteria based around MDMA.[30] A single death in the U.K., that of Leah Betts who drank too much water after taking a pill, was front-page news for months. It was rarely pointed out that the actual risk of death linked with taking MDMA was about one per million pills swallowed. That year in the U.K., for each person who died from taking MDMA (about 6–10), about 1000 people died from drinking alcohol, and over 2000 people died from smoking-related illness.[528]

Ketamine may be next in line to go through this process of demonization by media, and there are some signs that this is already happening. The histories of LSD and MDMA suggest that we should not jump to hasty conclusions with a mind-set produced by the media.

The irony of demonization is that it rarely reduces drug use. The best interests of public health are usually better served by giving an objective and credible account that avoids sensationalism. The best interests of the media often lie elsewhere.

### Set and Setting Again

An unfavorable set and setting are more likely to produce an unfavorable outcome. However, ketamine journeys tend to be internal events, so they are less affected by setting than LSD unless the dose is very low. Despite ideal settings, a person can inject ketamine, lose touch with their environment, and sometimes report a frightening experience. The effect of set and setting was examined in a study called: "Adverse reactions to ketamine anesthesia: abolition by a psychological technique."[551] The key to a positive experience was an interaction with the doctor who stressed the positive aspects of the drug and generated a feeling of warmth and empathy. Patients were told to think of a pleasant image as they were given the drug.

Expectations are an important part of the "set." The media may have increased a belief on the part of the user that they are having life-threatening effects from a drug. This was seen with LSD in the 1960s and MDMA in the 1990s. The newspaper report "Party Craze for Cat's Drug"[491] was 7 lines long. The 7 lines stated that ketamine had become popular amongst Swedish ravers, came from animal clinics, and that "medical experts" had warned that the drug could cause "a heart attack or even death." This would have been disturbing news for patients given ten times the psychedelic dose directly into their veins, by anesthetists. These articles lead to more users attending hospitals claiming that they are about to die—placing a burden on the health services—but the number of users does not go down. Not only did MDMA use increase after the campaign that used a photograph and the line: "Sorted: It took just one pill to kill Leah Betts," but a commemorative ecstasy pill appeared called "the Leah."

Depression, anxiety and panic attacks are common conditions in





the general population, and may be pre-existing features of the person's "set." It is certain that some drug users will develop these conditions, or even schizophrenia and mania (for example), regardless of any drugs they may have taken. Establishing that a drug actually causes a particular problem can require a large and expensive study. Nevertheless, the authors of brief case reports often boldly conclude that taking a drug caused a particular condition rather than being linked with the condition, possibly by chance.

Bearing all of the above cautions in mind, let us now consider the possible negative mental effects of ketamine.

### Journeys into the Fright World (Panic Attacks)

> I'd been taking K for about two years before I had my first panic attack. It was a sunny afternoon and I was alone in my room. I put Handel's *Messiah* on the stereo. Then it was on with the headphones, and in with the i.v. hit while sitting at my desk staring out the window onto a sunny lawn. It had to be i.v. because I had things to do later. There was only enough time for a quick visit. The next thing I remember is extreme panic. I was convinced that I had discovered THE SECRET. The secret was basically that this world we live in now is an illusion and I had seen the real Universe. The Gods could not let me live with this knowledge. I thought that I would have to die. This was all very fast, a matter of seconds. I ripped off the headphones and tried to determine if I should rush out of the apartment into the corridor screaming for an ambulance. Fortunately I decided that this was futile. My death was seconds away and I should lie on my bed and wait for it, which I did. My heart must have been going about 200 beats a minute. 30 seconds later I was perfectly O.K. I did feel annoyed about having such a terrible trip, cheated in some way, so there was nothing else for it but to sit at my desk again, put the head-

phones back on and have another hit…

**K.U.**

The fear of being killed for stealing forbidden knowledge from the Gods is an example of an archetypal mythical experience, in this case the myth of Prometheus who stole fire. The panic attack may have been due to the sudden removal of psychic defenses against deeply buried anxiety-generating material, possibly of a profound nature related to the life-and-death issues of the birth struggle.

### Automatic Behavior

Ketamine can allow automatic physical activity to occur without the awareness of the conscious will. This can result in physical injury, such as repeatedly walking into a wall (which has been reported). Automatic behavior is described at the end of this account of going to hell:

> I have done K about 60 times. The first 40 or so ranged from pleasant to ultimate insight and power to do anything. However, one night I did more than I ever had before. On this trip I visited *HELL*. Where I went was someplace nobody has ever gone or was supposed to go. Being an extreme risk taker I have faced death many times before; it has never frightened me. But, this went beyond simple death, dying in this place meant an eternity of torment that is not comprehensible in a non-K state. I did not, nor do not, believe in an afterlife. But, that experience was every bit as real as our "normal" reality. Since that experience all my K trips have sucked. Nothing transcendental happens anymore. I just go numb and my mind wanders a little bit but nothing else happens. Except this: now I always get up and walk around at the apex of my trip. So far I have not been able to stop myself from doing this…
>
> **K.U.**





### Another Fake World

"Depersonalization" is the term used for feelings of being unreal, detached and unable to feel emotion. It is very unpleasant. Sufferers may feel that they are separated from the world by a glass wall. "Derealization" is where the setting appears to be unreal, a stage-set quickly whipped up by the Gods, filled with paper cut-out people. This is also very unpleasant. Where the condition persists beyond 7 drug-free days, other causes should be considered including other drugs, fatigue, depression, anxiety, schizophrenia, and epilepsy. There is also a specific condition, Depersonalization and Derealization Disorder, which may occur spontaneously.[628]

### Dumb Terminals Connected to the Net?

Attention, learning, and memory are clearly altered while a person is affected by the drug but research into persisting problems is rare and difficult to do well. It is not easy to eliminate the effects of other drugs, such as alcohol and *Cannabis*. Persistent problems are those still present once norketamine has been completely eliminated from the body. Some people will rid themselves of norketamine far more slowly than others. The process can take weeks rather than days. Before concluding that there is a persistent problem present, urine tests should be clear of all drugs and their breakdown products. Liver function tests (for alcohol problems) should be normal, and in some cases the new, sophisticated tests for recent bingeing on alcohol should be carried out (carbohydrate deficient transferrin tests and also selected hair tests).

What people say about their drug use is sometimes wrong. Despite the best of intentions, they may lapse and use drugs while taking part in studies, and then deny this to the experimenters as they do not wish to disappoint them or be excluded from the study. It is not enough for authors to say that subjects were asked to abstain from drugs for several weeks, or that urine tests were carried out. The actual results of the tests must be published, along with the rest of the report. When I

was studying high-dose MDMA users, many of the urine tests were positive for *Cannabis*. I recall carrying out a 6-hour test at the lab one Saturday morning. I left the room for a few minutes and on my return found that the two men had risen from their beds—where they were supposed to be lying still—and were leaning out of the window smoking *Cannabis*. It seemed better science not to publish these tests due to contamination of the data.

Depression and anxiety can also have serious effects on memory, attention, and concentration, and must be excluded as possible causes. A control group that is a genuine match for the subjects is essential.

A study was carried out on women who were to undergo elective surgery.[315] One group was given a mixture of the antipsychotic drug droperidol, which has many unpleasant side-effects, and the opiate fentanyl. The other group was given diazepam (Valium®) and Ketalar®. The women were questioned the next day and at 3 months. At 3 months, the only significant difference between the two groups was that 25% of the women felt that their memory and concentration were severely affected by the droperidol/fentanyl, versus none for the diazepam/Ketalar® group. There was no significant difference in dreaming, nightmares, hallucinations, or illusions between the two groups. Does what amounts to a single, normal adult dose of droperidol really cause lasting impairment of memory and concentration? If so, this would be of grave concern to doctors who prescribe far larger doses, to be taken daily for long periods. The women disliked droperidol at the time of the surgery. This dislike made them far more inclined to blame the anesthesia for any problems they were having 3 months later, rather than the numerous other possible causes. Women who had been given droperidol complained of inner restlessness, dysphoria (the opposite of euphoria), and unnatural tiredness, immediately after the operation.

While ketamine is still in the body, it blocks N-P receptors and this is known to impair some types of memory formation while the drug is present.[379] This is one reason why so little of a ketamine journey is





remembered. Even those who give vivid accounts say that they are recalling only a tiny fraction of their experience. The same mechanism is probably responsible for the failure to recall dreams, except that a natural blocker is involved. This may be the physical level of a "mind protection system" that acts to obliterate awareness of "other realities" incompatible with the ordinary, social consensus reality. Impairment of this system may play a role in some forms of psychiatric disorder. Memory for ketamine experiences is also poor because of reduced blood flow to the memory areas of the brain.[607–9] However, these memory-reducing factors do not explain ketamine-dependent memory. There are studies that suggest that a person is more likely to remember what they learnt while affected by the drug if they take it again, rather than if they are tested when drug-free:[234]

> I took the K on a leaden afternoon in Edinburgh. Bang! It was like I was right back in Malibu again, where I was the last time I injected K. I thought "I'm ME again, I'm BACK." I thought that who I had been in between was a deluded fool, who had as usual been sucked into doing things she didn't want to do. I remembered all the things I had thought about in Malibu. I thought about the big decisions I had made, and was really sorry that I hadn't followed through with them. I stopped doing K for a few months and then did it again. Malibu again. On a different time loop to the usual reality? Like being two people. I don't know which of us is deluded so I'm still postponing the decisions.
>
> **K.U.**

### Ketamine—Can Chronic Use Impair Memory?

This was the title of a case report I published in the *International Journal of Addiction* in 1990.[244] An anesthetist became dependent on ketamine and described problems with his memory, attention and concentration, and a subtle change in visual perception. A binge would be

followed by impaired recall for both new and old memories, and difficulty with finding the right words. His greatest worry was that his vision had changed in some way. On re-entry, he would briefly experience a visual effect like the picture slipping upwards (a loss of vertical hold) on a defective television. After a year of use, he noticed a subtle effect persisting into drug-free periods. This was like looking through clear water combined with a slight graininess. Fatigue, stress, and anxiety increased this low-level visual "white noise." An eye specialist could detect nothing amiss. The "clear water" description is like William Burroughs' repeated phrase that the air was "clear as glycerine" in his 1959 book *Naked Lunch*, while the "addicts of drugs not yet synthesized" and "brokers of exquisite dreams" drifted through the cafes of Interzone.[50]

The visual change was mildly alarming, but he was unable to resist a strong compulsion to keep injecting, although the drug was now less likely to produce memorable out-of-body experiences. Nevertheless, he kept going in the hope of another "breakthrough to the other side." He did not use other drugs during this period.

This person was contacted for further details and an update several years later. The ketamine use had stopped in 1995, with a high tolerance and few of the sought-after effects remaining (almost no psychedelic effects). Hopes of another "breakthrough" had finally been abandoned. He appeared quite normal apart from a mild depression. He still felt that his world looked slightly grainier than it should, especially when looking at a background such as the sky. The "white noise particles" appeared to be in rapid motion. He said:

> I don't worry about it anymore because it doesn't have any real impact. It doesn't stop me from doing anything. I'm quite sure that I didn't see this way before I did ketamine and I think that something has definitely changed. It could be in the eye, the brain, or the mind. Sometimes I think that I am more able to see the world as made up of tiny particles. I only notice it if I'm very anxious or I've been drinking. Frankly, I've forgotten what it's like not to see this way. That's probably why I don't notice anything wrong anymore. I still have a bad short-term memory but I've adapted…
>
> **K.U.**





The branches and junctions of adult neurons undergo many changes throughout life. This is like a tree growing new buds. N-P receptors are involved in these structural changes ("plasticity"), which could form the basis of some types of long-term memory, and of the brain's attempts to compensate for aging. Chronic, high-dose ketamine in animals blocks this plasticity, but the long-term significance for humans has yet to be clearly established.[71, 82, 488]

Some persistent memory difficulties after prolonged use of ketamine may be due to a molecular change within cells. The failure to see, through a microscope, dead cells, damage to areas inside cells, or damaged nerve terminals in drug toxicity studies is not necessarily evidence of a lack of persistent change in the "wetware" of the brain. When drugs bind to cell surface receptors they sometimes trigger signaling systems, which can switch on or switch off certain genes on chromosomes (DNA). Switched on genes can start the process leading to the formation of a new protein (gene expression), while switched off genes may prevent formation of a protein. This may stop a memory from forming. It is over 10 years since we showed that psychedelic (subanesthetic) doses of ketamine can trigger genes to produce the "immediate early protein" c-Fos, which then affects other genes.[119–20, 122, 432]

The relevant studies have yet to be carried out with ketamine, but animals who have been made cocaine-dependent do show evidence for persistent changes in gene expression leading to altered cell signaling. This is thought to explain the lasting nature of the changes in response to cocaine discussed previously.[222] It is likely that ketamine shares this property with cocaine. Chronic administration of cocaine

results in strange forms of Fos protein appearing that do not appear after acute cocaine.[222, 224] An assurance of complete long-term safety should not be taken from the failure of neuropathologists to find dead cells under microscopes.

### Persistent Perceptual Change

This is a term used to describe the visual white noise mentioned in the case above. These problems differ from flashbacks because they are chronic rather than episodic. They are not always seen as a negative development:

> 5 years ago I was in a car accident that resulted in a stroke, which altered brain function in my right occipital (visual) lobe and who knows where else, physically manifesting itself as numbness on my left side and a visual blind spot covering most of the upper left hemisphere of my sight. In the last year or so, I have begun trying recreational drugs. When I do dextromethorphan (AUTHOR'S NOTE: marketed in the USA as Robotussin®, often shortened to "robo," a ketamine relative and N-P receptor blocker) my blind spot becomes very active, filled with ghostly shapes. Well past the noticeable effects of the robo-trip, these images usually last 5 days to a week. I've done dextromethorphan probably 20–30 times and it's a consistent reaction. That's all stayed the same until just this weekend, when I was out raving. I was sold something other than E. It was ketamine. Very robo-like, sort of numb, hard to walk…last night, still noticing the effects, suddenly there were very strong flashes and activity in my blind spot. At once I noticed that things were very different. For one, I could see color through the blind spot, something I haven't seen there for over five years. The other thing was that I could detect movement in that visual area. A huge change, from nothing to something…my blind spot is now about a third the size





> that it was yesterday, and I have a nice new portion of sight that's been missing for a while. I'm guessing that the new sight will not fade, which I'm pretty darned happy about.
>
> **K.U.**

This may be related to a report that ketamine had a persistent, beneficial effect in apparently "burnt-out" patients suffering from chronic schizophrenia, who appeared to have under-active brains.[541] The sudden activation of the higher brain may have "unblocked the drains" and re-activated dormant pathways. However, there is a risk of triggering an acute attack of positive symptoms.[345, 378] Another interesting account:

> After i.m. injection of ketamine several times daily for about 3 weeks, I have developed a strobe-like effect in my visual field whenever I close my eyes. It seems to be going away, although it becomes quite noticeable if I take a psychoactive substance. Strangely, taking ketamine reduces the effect, while drinking ethanol seems to increase it. I've also noticed an increase in the psychological anxiety in my life. I'm not sure if this is directly related to ketamine, but I would assume it is.
>
> **K.U.**

### Olney's Vacuoles

In 1989, psychiatry professor John Olney reported that ketamine caused reversible changes in two small areas of the rat brain.[454] 40 mg/kg resulted in fluid-filled bags ("vacuoles") appearing inside cells. The bags disappeared after several days, unless high doses of the far more toxic PCP or close relative MK801 were repeatedly given, in which case some cell death was seen.[450, 455]

Roland Auer injected monkeys with MK801 and was unable to produce any vacuoles.[22] I asked Auer in 1998 whether persons undergoing anesthesia with Ketalar® were at risk of these changes. His reply was that he doubted that "it was even a remote possibility" because of

fundamental differences in metabolism between the rat and human brain.[21] As discussed in Chapter 4, ketamine can block excito-toxicity (brain damage due to low oxygen, low sugar, epilepsy, trauma, *etc.*), but it can also excite the brain at low doses by switching off the inhibitory system.[121] Why isn't this damaging in monkeys and humans? The answer probably lies in the fact that ketamine binds to an increasingly wide range of different receptors as the dose level rises, and some of these receptors act to shut down the excitement.[133–6, 450, 452, 529–34] In humans, by the time a potentially toxic dose is reached, the "excitement window" has been passed and the drug is starting to activate other systems that switch cells off again, a result of ketamine's promiscuity that improves its safety relative to MK801. MK801 binds very specifically to N-P receptors.[302]

The other part of the explanation is that rats have rates of brain metabolism that are almost twice as high as those in humans to start with. It is because of this higher base rate of metabolism that ketamine causes over-excitement in rats at doses below those at which it activates shutdown systems.[21–2]

Frank Sharp also works in this area. I discussed with Sharp how this issue stood in 1998. His view was that reversible toxic changes in the rat started to appear at 40 mg/kg and reached a level at which no further changes occurred (a plateau) at 100 mg/kg, when a little cell death could be seen—but matters would not progress beyond this point. Extensive attempts to produce toxic changes in monkeys had been a total failure at doses up to 10 mg/kg i.m. These monkey studies are unpublished.

I sought the view of Olney's colleague, Nuri Farber. The work of his team indicated that N-P receptors must be blocked for at least 2 hours to cause reversible changes, and at least 24 hours to produce some cell death, in rats. Ketamine has a short half-life (the time required for the blood level to fall to half its original level): only 20 minutes in the rat. His team thus had no ethical qualms about using Ketalar® in humans. However, he thought that the methods used in monkey studies so far were unsatisfactory, because the animals were





probably too young. Only adult rats show the toxic changes.[136] He was not prepared to accept a clean bill of health for the drug in primates until this work with older monkeys had been done, and until the drug companies published their monkey studies to support their claims of harmlessness.[137] There is thus no published evidence at this time that ketamine can produce toxic cell changes in monkeys. The unpublished monkey data that we know about, that of Frank Sharp, actually shows that there is no damage at doses up to 10 mg/kg. The failure to produce toxic changes in monkeys is probably one reason why the FDA did not remove Ketalar® from the market.

Some people see 40 mg/kg as so far above the human dose level as to be irrelevant in any case. This is not the most useful way to look at this issue. When given by intramuscular injection, humans are at least 10 times more sensitive to the anesthetic effects than rats. When rats are given 30 mg/kg, the experimenters describe this as a "subanesthetic dose," versus a "high anesthetic dose" of 150 mg/kg. In humans, an equivalent subanesthetic dose is about 1 mg/kg and the top anesthetic dose would be about 13 mg/kg.[466] However, humans are much less sensitive to the neurotoxic effects. These two matters are directly related: humans are protected from toxic changes by the rising anesthesia, which cuts in above a certain dose and calms cells down. This also happens in rats, hence the 100 mg/kg plateau, but it happens too late to completely avoid some toxic changes as rats are already running hot because of their twice-as-fast metabolic rate.

These brain cell changes do not appear if rats are pretreated with certain drugs. The list of drugs that can block the toxic changes is long and diverse, and includes LSD and psychedelic amphetamines (*e.g.* DOM), all the benzodiazepines (diazepam, temazepam, *etc.*), all barbiturates, drugs that block cholinergic receptors, a wide range of antipsychotic drugs including haloperidol, clozapine, olanzepine, *etc.*, muscimol, clonidine, and lofexidine, nifedipine, drugs that block other glutamate receptors, and halothane.[28–30, 432–4, 450, 452, 454–5, 529–34]

Most of these drugs block toxic changes in rats by switching on a range of different "calming" systems, depending on the drug used.

Ketamine is highly promiscuous and eventually binds to the same receptors as some of the protective agents listed above, which shutdown the over-excitement. This is another reason why ketamine is far less toxic than MK801, which is very selective for N-P receptors. MK801 does not bind to "molecular switches" for the calming systems. So the toxic effects happen via one neurochemical system (glutamate) and this is switched off by other systems activated at higher ketamine levels (*e.g.* the opioid system). In humans, the opioid system (amongst others) cuts in before activation of the glutamate systems reaches the point where cell damage occurs, but in rats this is not the case.

It has been suggested that the process which is neurotoxic in rats is responsible for ketamine experiences in humans, and may be involved in schizophrenia.[2, 136] There are some problems with this idea. Many of the drugs that block toxicity are not treatments for schizophrenia. For example, LSD is a psychedelic drug and is unlikely to be prescribed for schizophrenia.[135] Nor is it proven that these drugs will actually block the psychedelic effects of ketamine in humans. Some of these drugs may simply remove the last remaining capacity to form a memory of what occurs. Lorazepam was given to normal humans who were also given a psychedelic ketamine dose. The lorazepam reduced emotional distress but not ketamine "psychosis." Lorazepam increased the sedative, memory-impairing, and attention-impairing effects.[336] It seems that when a person "mad" on ketamine is given lorazepam, they may become a sleepy "mad" person, rather than less "mad."

Nevertheless, anecdotal accounts often indicate that LSD, MDMA, 2C-B (4-bromo-2,5-dimethoxyphenethylamine), and other related drugs, when taken about 90 minutes prior to ketamine, can dramatically reduce ketamine's ability to produce dissociation. The resulting state appears to differ from either drug and can be much easier to remember. Amphetamines and cocaine also reduce dissociation and provide an "anchor" in the external reality. It is not clear whether these people are just "wide-awake drunks," or whether we are looking at something more complex with implications for human health





and illness. Until rats learn to talk, it is unlikely that these questions can be answered without listening carefully to human accounts.

> 2C-B can strongly enhance recall of the Ketamine experience. On a K-only trip, I normally have very little memory of the fine details of the journey. I usually am left with only the vaguest impressions of what happens once the process of dissolution of my individual identity and merging with the one is complete…I found that pre-dosing with 2C-B allowed me to…bring much more back out of the K-hole.
>
> So last night I took 25 mg of 2C-B orally. 90 minutes later, as I felt its full effects begin to manifest, I gave myself an intramuscular injection of 100 mg Ketamine. I lay down, and within two or three minutes the now familiar onset of the K overtook me; a loud ringing in my ears, followed by a narrowing/contraction of my reality tunnel until the outside world and my physical body were utterly gone. Then, instead of the usual complete merge with pure consciousness, I found myself as a bodiless point of awareness and energy floating in the midst of what seemed to be a vast vaulted chamber. There was a sense of presence all around, as though I was surrounded by millions of others, although no one else could be seen. In the center of the chamber was a huge, pulsing, krishna-blue mass of seething energy that was shaped in a geometric, mandalic form…Then suddenly, I was back in my body, lying on my bed. "Wow," I thought, "it's over. How abrupt!" I tried to sit up. Suddenly my body was gone again and the room dissolved into the blackness of the void, my reality being quickly pulled out from underneath my feet like a hyperspatial magician's tablecloth trick. This process repeated itself several times, much like the classic dream in which one keeps thinking they have awoken, only to find themselves in yet another dreamscape. This process was actually a little scary, as I had some fear of

never making it back to consensus reality, my body lying in a hospital in a vegetative state as my consciousness stayed stuck in a weird, repeating loop.

Eventually I woke back into a familiar reality that didn't dissolve out from under me.[593]

**Trey Turner**
"2C-B plus Ketamine," *Trey's Travelogues* (1996)

I find that if you take 120 mg of E on an empty stomach and then a stiff dose of K about 1.5 hours later, you go to a whole new state. It's like you're on a new drug altogether. I call it "Wow," because that's all I can say when I do it. Wow! You can't think about anything. This is just pure hedonistic fun-time. The land of the happy child. It's like bouncing on a trampoline. You definitely don't leave the room behind on a K dose which would normally take you far away. The E really holds you together. It's like having a party on a pleasure yacht moored in the harbor, instead of battening down hatches and heading out to sea. It never really develops. You don't really travel anywhere although you definitely "get off."

**K.U.**

### Too Low and Too High

Ketamine use is usually linked with feeling high rather than low. In most cases, on stopping there is a gradual return to normal mood. Chronic use is occasionally followed by depression, but the chronic use may itself have been self-medication of a pre-existing or latent depression. Suicidal actions may not always be due to low mood, as we have seen in the case in Ariel. Being "too high" is more likely than being "too low." Ketamine may trigger an episode of mania in persons with manic-depression (bipolar affective disorder). It has anti-





depressant effects,[33, 560] and a specific action that reverses the effects of the mood-stabilizing drug lithium.[111] Lithium itself, which is "anti-manic," has been shown to have some important effects that are just the opposite of ketamine effects (which can be seen as "promanic"). Thus lithium activates N-P receptors.[220]

This chapter began with a caution about concluding that ketamine caused the problem in question when the problem may have a pre-existing one. In the following account, the person describes a suicide attempt that led him towards taking ketamine and then wonders if ketamine has made him suicidal, a difficult question to answer under the circumstances:

I had been lying in my black Porsche for over two hours with a large hose taped to the tail pipe and then taped to the window. This was the hose from an industrial shop vacuum and I had all the confidence that I would die in that car. As I lay in my car dead, I felt waves of consciousness passing in and out of me…I thought: "This is the moment, the paradigm shift when I transform from individual to collective."…To my surprise and to my horror this transition was not a peaceful, seamless, transmutation of energy. I felt the raw power and the chaotic force of beingness. As waves of spiralling energy passed by me, I could feel the pulling of my very essence being swept into it…I fully expected to die. You cannot imagine the surprise I received when I slowly realized that the circular, spiralling consciousness waves violently pulled away from me. I had been brought back here to earth…I still remember wondering what went wrong. Two hours should have been more than enough. In and out of the hospital in one day. Doctor says blood level of CO was 43%, you die at 40%, you are lucky he says (*sic*). "You may be retarded," the nurse tries to prepare me…Miraculously I come out with just a headache, and a new perspective.

I seek to explain what happened to me when I was on the edge of consciousness. 3 months pass. "Hey," I ask a friend, "Do you have any ecstasy?" He says:, "Try some special K." That night I did enough to know that I had found my doorway. What followed took me to the brink of insanity and back…so I had a NDE with a suicide attempt and a carbon monoxide blood level of 43%. About 6 months later I began to replicate this with i.v. K, fashioned after John Lilly's work. I used between 75–100 mg i.v. in a controlled environment. For me the positive aspects of my K experiences are being overshadowed by my inability to stop using K…There is a very strong attraction to committing suicide while under the influence of K, although I am committed to avoiding this peril. I have had no problems hanging up the MDMA, but K I can't stop. K is available over-the-counter in Mexico and very inexpensive. I can go through 1000 mg in about 6 hours. I wish I could go back to the days of once a month 80 mg i.v. I have found others that use K and we have journeyed together. We are all having very deep delusions about K's ability to unlock a portal into another world. Any help would be greatly appreciated.

**K.U.**

### Pandora's Box Syndrome

People who have taken large quantities of psychedelic drugs for a long time may develop a high level of internal, "mental" imagery. It is as if perforations have been made in the defenses usually separating conscious from unconscious processes. This results in material percolating through the conscious mind where it would not normally be found. I have named this syndrome after the legend of Pandora's box: once opened, it proved impossible to push back in all that flew out. The condition is not serious. It is still possible to work and to go about the normal business of life. The person may be said to have "lost their





edge" or "lack focus." The imagery is intensified by the same factors that intensify flashbacks and persistent perceptual change (anxiety, fatigue, other drugs, *etc.*). It is possible that this is a form of anxiety or dissociative disorder.

### Flashbacks, Acute Stress Reactions, and Post-Traumatic Stress Disorder

The term "flashbacks" is widely used but rarely defined. A recent review of ketamine and its effects defined flashbacks as episodes lasting for a few seconds in which the user re-experiences some of the effects.[620] Predisposing mental factors are important. This is very different from the popular view that a flashback is a complete, unprovoked re-living of a drug experience while fully awake. A flashback starts after a period of normality. It is episodic, not chronic.[628] No long term, high-dose users whom I have interviewed reported having a full ketamine experience when they had not taken the drug, after an intervening period of normality.

Siegel reported upon 23 ketamine users who had been recruited from previous studies of cocaine and LSD users.[542] They need only have used ketamine once in the preceding year. The users reported a lasting elevation in mood (nearly half), deeper insights into self and others (one third), and positive changes in attitudes and personality. 50% reported "flashbacks," although the term was not defined in any way. They did not suddenly find themselves going into a trance-like state months later. What is being referred to here is some mild persistence of phenomena for a few days after the immediate effects have worn off.

We can learn more about drug-related flashbacks by considering another condition in which flashbacks occur: Post-Traumatic Stress Disorder (PTSD). PTSD is a delayed and/or protracted response (as distinct from an immediate response, which is an "Acute Stress Reaction") to a stressful event of an exceptionally threatening or catastrophic nature, likely to cause distress in almost anyone.[628] Predisposing factors such as personality problems or neurosis may make the disorder

more likely, or aggravate its course, but they are not enough to explain it. Ketamine experiences can be very stressful and may be perceived as catastrophic in some cases, so some flashbacks following traumatic journeys may actually be PTSD. LSD flashbacks are known to be far more likely after a traumatic experience.[574]

The typical symptoms of PTSD include episodes of repeated reliving of the trauma in the form of intrusive memories (these are what the World Health Organization refers to as "flashbacks")[628] or dreams, emotional numbness, detachment from other people, loss of the ability to derive pleasure from life, and avoidance of reminders of the trauma. There is usually a state of hyper-arousal (rapid heart rate, sweaty palms, being "very jumpy") and difficulty sleeping, and there is often accompanying anxiety and depression with excessive use of alcohol and other drugs. The condition follows the trauma after a latency period of a few weeks, has a fluctuating course, and recovery can be expected in many cases.

Some forms of PTSD may involve underlying, persistent changes in the "wetware" of the brain following traumatic stress.[4, 599] It may be the extreme stress that produces this change, resulting in problems with memory, learning, attention, anxiety, and depression.[599, 601] PTSD can also produce episodic hallucinations starting several weeks after the trauma.[299] Studies with ketamine at psychedelic doses recently led to the conclusion that the glutamate system plays a major role in PTSD.[64] There are elements of PTSD and conversion/somatoform disorder (where are there are symptoms in the body, such as pain, which have no basis in structural pathology) in the following account:

> Ketamine is basically the reason I will not touch drugs, including alcohol. I can't be sure how much of my truly awful experience I should attribute to the drug itself or the context in which it was taken. I probably took ketamine in one of the worst circumstances. I was given ketamine when I was 6 years old for an operation on my arm. I was also given Valium® so I didn't experience anything hallucinogenic, but I definitely had





> the dissociation. I spent a good bit of time smacking my face into things and quoting lines from *Young Frankenstein*, then I was slapped down on an operating table and watched my arm get sliced open fully aware of what was happening and fully aware that I couldn't even move my own body to try to stop it. I came out of the operating room with blood-shot eyes screaming to my mom that, "They didn't put me out, I was awake the whole time." I told you about that to explain the circumstances I was under when I was given the drug, which might explain a good deal. A few weeks after I had gotten out of the hospital I had a flashback in which I had intense psychosis, and paralysis. I thought I was going out of my mind, and I couldn't pick myself off the floor to unlock the door that my sister was crying and pounding on. It also seemed to have affected my sleeping patterns, and gave me nightmares for years to follow. I know that it might have been the best thing to give me but sometimes I wish the doctors had just clubbed me with a 2" x 4" instead of giving me ketamine. While it may be some wonder drug that doesn't jeopardize breathing and heart rate, I feel like it fucked me up for years, and sent my mom to a psychiatrist because my psychosis spread to her…
>
> **K.U.**

A brain effect specific to a particular drug may not be responsible for flashbacks, as a wide range of drugs with quite different actions in the brain (*e.g.* LSD and MDMA) have been linked to flashbacks.[90, 404] Some drug-related flashbacks may be a form of conversion disorder (hysteria, dissociative disorder), where anxiety is "converted'" into other symptoms such as perceptual change, just as it may be converted into physical symptoms such as a "paralysed" arm. Dissociative drugs may be especially likely to trigger such symptoms. Hysteria is now classified as a dissociative disorder.[628] The main feature of dissociative disorders is a partial or complete loss of integration between memo-

ries of the past, awareness of personal identity, sensations, and control of movements. These are all major effects of dissociative anesthetics, which can dramatically increase fragmentation into subpersonalities. A famous example is that of the crime writer Agatha Christie, who would sometimes "forget" who she was, and travel by train to a strange town, booking herself into a hotel room under another name before gradually coming back to an awareness of her "normal self."

### When The Doors of Perception Become Un-Hinged

There are reports of prolonged hallucinations following anesthesia. As there was no normal period between the operation and the onset of the hallucinations, and these were not episodic, they are not flashbacks. The real post-drug flashback is a rare beast for which other animals have been mistaken from time to time. The author of the following report does not make this mistake:

> In 1970, I had a back operation. I was 24, in excellent health, both physically and emotionally. I had just completed my first year of law school. After my experience with ketamine, I was advised, and agreed, to take a semester off from school. I was warned that I might experience flashbacks. I did not. I awoke from the anesthesia to the most petrifying, unpleasant experience of my life. I experienced hallucinations that were beyond description. I also experienced severe memory loss. I was unable to recognize family and friends. I was also very anxious and restless. I said things that made no sense. According to the attending anesthesiologist, I was "insane" for five days. The (doctor) later went to NIH to brief the doctors there of my reaction. My family and I were later told that my reaction was worse than the norm, but certainly not atypical. I have always been surprised that this drug is still available, but I understand it does have positive pediatric and veterinary uses.





> I am of the belief that a mature individual should be able to do with their body what they want, as long as no one else is injured. As a result of my experience, though, I would certainly wonder why anyone would wish to experiment with ketamine…
>
> **K.U.**

Visual hallucinations continued for 5 days in an 11-year-old boy.[470] However, the boy was given Ketalar® as part of investigations into brain-based symptoms. Before he was given this drug, he had abnormal brain waves over the visual cortex, raised pressure in his brain, severe headaches, loss of appetite, vomiting, fever, and nausea. He was given the anesthetic, which wore off without consequences. 10 days later, he was given Ketalar® again, and had a brain investigation involving the injection of air into the spaces inside the brain. This was followed by 5 days of hallucinations typical of delirium. Five months later, he still had fever, headache, and no diagnosis, but no further hallucinations. Clearly, there are several possible causes for visual hallucinations in this case. Operations can be followed by delirium for a few days, regardless of the anesthetic used. Nevertheless, the authors of this report concluded that ketamine was the cause.

1,400 patients were given full surgical doses. There were 3 cases of prolonged hallucinations. The longest period over which the hallucinations continued was 3 weeks. In no case did hallucinations begin after a period of normality.[151]

In a study of over 200 patients, the mental changes following dissociative anesthesia were compared with other anesthetics. Tests were carried out repeatedly for up to a year. There were no significant differences between the groups in mental performance, hallucinations and behavioral factors. The conclusion was that ketamine does not cause persisting impairment of intellectual function or personality.[9]

Ketalar® or halothane gas (another anesthetic) was given to over 100 children. One month later, there was no difference in the frequency of emotional disturbances between the two groups.[418]

Five monkeys were injected with ketamine at 25 mg/kg, for 27 sessions over 3 months. The animals remained in good health and no odd behavior was noted once the immediate effects wore off.[44] The authors of an editorial titled "Are there long-term effects of ketamine on the central nervous system?" concluded that in spite of the known short-term effects, the drug was unlikely to cause permanent changes in personality or intellectual function.[522]

### Sleep Paralysis and Night Terrors

> I recently have become straight, and haven't used any drugs whatsoever in two months. Prior to this, I was using ketamine regularly and in large quantities for about a year…now, when I sleep I keep getting "sleep paralysis" constantly. Regularly (once or twice a week) I'll wake up, but still be dreaming, and I can't move my body but am physically aware of it. I will then be trapped in this strange prison-like dimension for a while, sometimes having vivid and bizarre dreams, while being awake. It progresses, and unfolds to become a dream, within a dream, within a dream, *etc.* It's frightening, yet amazing. I've never experienced anything remotely like this before K.
>
> **K.U.**

Night terrors were discussed in detail in Chapter 4. To briefly recap, the sleeper wakens from deep stage 4 sleep with a loud scream and appears confused and disoriented.[297, 348, 628] They may report being either trapped in a small space or in a place without co-ordinates. These are not classified as "nightmares" as they do not arise during the normal dream REM periods, although the classical association between REM and dreams has been greatly modified following recent work showing that "mentation" does occur during non-REM sleep.[143, 561] The "place without co-ordinates" can be interpreted using ideas





about the quantum nature of the deep self. It may be that dreaming sometimes involves participation in these zones. In value-free language, the "no co-ordinates" space might be described as a 0-brane (see Chapter 5).[186] Another possibility is that this is an archaic memory of floating in the womb, an interpretation that may also apply to the "entrapment" night terrors. The "no co-ordinates" space acquires meaning if it is seen as representing complete alienation, the ultimate disconnection from everything that is the dark side of "universal love and connection" (see Chapter 5).

There may be a more prosaic explanation: the person becomes half awake in a disoriented state due a disorder of the normal sleep mechanism, and interprets the darkness around them as meaning that they are buried or trapped in some way.

A person described to me injecting ketamine and having several panic attacks, including "no exit from hell" experiences. During one of these she had screamed loudly, described by her friend as a piercing and unearthly sound. Several weeks after stopping use of the drug, the night terrors began. They continued for a few years, and would tend to stop when she was taking drugs (including alcohol), and would start again when she had been drug free for several weeks. The condition gradually faded. She recalled a brief period in her teens when she would leap from the bed and knock books from the shelf, and had a disturbed childhood. The night terrors started in her mid-twenties. The screaming may not have appeared during periods of drug use as the drug provided a conduit for buried parts of the psyche to communicate with the surface. When she stopped using ketamine, these parts may have been "entombed" and only burst through during deep sleep, by means of a penetrating scream. Those who prefer "organic" explanations should note that these conditions respond to psychotherapy.[348] There are other cases of persons who have had night terrors linked with ketamine use.

Following ketamine experiences, there is a rebound in non-REM delta waves during subsequent sleep,[142–3] and night terrors arise during non-REM periods. As noted above, the old idea that REM sleep equals

dreams, and non-REM sleep equals brain shutdown and no dreams, is wrong.[561] Ketamine may reduce the need for sleep by reproducing aspects of the dream process.

### Psychosis

In the area of psychedelic drugs, words such as "madness" and "psychosis" must be used with care. These terms became weapons in the culture war of the 1960s, and still sometimes involve unhelpful value judgements.[193] Where psychedelic drugs are concerned, some people still fail to make a distinction between inebriation (the effects usually associated with that drug), and psychosis.[479] Like the NDE, this may be an area where it is more useful to consider levels of truth, like different floors in a building, than to become bogged down in futile disputes about "reality." Moore both believed in "other realms" and repeatedly warned that "this delusion of grandeur thing has to be watched."[423] On her "Fire Lady" ketamine journey she described herself as "briefly but certifiably insane."[423] Lilly was also wary of what he called the "over-valuation domain,"[363] although he too believed that transpersonal experiences were possible.

Many of those who take ketamine are convinced that some of the resulting experiences are "real." They are certain that doors into other realms that actually exist opened for them, and that the drug can act as a key for those doors. Most of these people are not insane, just as persons who regard their near-death experiences as real are not usually insane. However, frequent experience of these other states of being may result in problems back in "ordinary reality" if the dividing lines between them should begin to blur. This lack of borders between the "realities," the inter-penetration of one by the other, can cause distress and may be interpreted as psychosis.

On another level, people with confused realities may have abnormal brain chemistry, and may have paranoid and grandiose delusions relative to the beliefs of the ordinary world. Both the brain chemistry and the realities usually normalize as drugs leave the body, unless there





is an underlying disorder.

The use of ketamine could briefly alter the picture in pre-existing schizophrenia or mania. In some types of schizophrenia, some glutamate-releasing cells are missing so there is an excess of dopamine, because glutamate reduces the release of dopamine.[325, 419, 499, 625] The shortage of glutamate-releasing cells is probably due to genetic and pre-birth factors. The net result may be similar to blocking receptors with ketamine, so it has been suggested that ketamine can produce a "model" of schizophrenia.[335, 419–20] John Krystal and colleagues at Yale University gave Ketalar® to normal people, and said that the effects were like the main groups of schizophrenic symptoms: the positive symptoms (hallucinations, delusions, and disordered thinking), and the negative symptoms (lack of emotion, apathy, disengagement from life, isolation, concrete thinking, absence of thought, impaired memory, attention, concentration, impaired ability to plan ahead and complete a task).[335] A problem with this model is that the normal subjects do not usually have auditory hallucinations with a sense of "badness," such as hearing voices telling them to kill others, or that that they are evil and should kill themselves, if they do not have an underlying illness. The lack of "voices" and a sense of badness were also a seen as a problem in LSD models of schizophrenia.

Chronic, higher-dose use of amphetamines can have effects like the positive symptoms of schizophrenia. Heroin can have effects that are like the negative symptoms. Ketamine again demonstrates its two-sided nature in producing effects that some doctors label as both positive and negative. That heroin dependence can model negative symptoms was noted in 1959:

> I had not taken a bath in a year nor changed my clothes or removed them except to stick a needle every hour in the fibrous gray wooden flesh of terminal addiction. I never cleaned or dusted the room…garbage piled up to the ceiling. Light and water had been long since turned off for non-payment. I

did absolutely nothing. I could look at the end of my shoe for eight hours…a gray screen always blanker and fainter…[50]

**William Burroughs**
*The Naked Lunch* (1959)

The Yale studies defined madness using very general terms such as "unusual thought content." These are so non-specific that they allow for a vast number of possibilities, ranging from therapeutic near-death experiences to the works of famous poets. Some of these terms are similar to those Einstein used to describe quantum physics (see Chapter 5). Many of the ketamine effects described in the Yale model were already established in the early human studies of the 1960s.[509] Thirty years later, the main changes are in the interpretation and frame of reference. The dream-like states of 1968 are the schizophrenia-like symptoms of 1998.[2]

In an earlier study, 29 persons with chronic schizophrenia were given ketamine. All were suffering from negative symptoms, and had failed to respond to typical anti-psychotics. Many were propelled out of their apathetic and unmotivated state, and were considered to have been greatly improved by the new treatment.[541] It may have switched on the frontal lobes, turning the activity up to more normal levels. Brain scans do show that both hallucinating patients with "positive" symptoms, and persons hallucinating due to psychedelic ketamine doses, have activated frontal lobes[45, 298, 465, 607–9] in what has been interpreted as a schizophrenia-like pattern. Ketamine does this by several means, including activating glutamate transmission at non-N-P glutamate receptors.[420] So blocking N-P receptors does not mean a global block on excitatory transmission. In fact, at psychedelic doses just the opposite is true. It is important to appreciate the existence of non-N-P glutamate receptors, or the story will become confusing.

There is a possibility that ketamine will tip a schizophrenic patient with negative symptoms over into florid psychosis, but this did not happen with any of the 29 patients in the study mentioned above.[541] Ketamine has been used as an anesthetic in persons with schizophrenia without making them worse once the drug wore off.[233, 347] Nevertheless, it is generally advised that the drug be avoided as an anesthetic in such persons, and this is clearly the most prudent course. Psychedelic doses of ketamine have been given to actively hallucinating schizophrenic patients for research reasons. The usual result was that the specific underlying psychosis was briefly intensified, until the drug wore off. For example, they would hear voices that ordinary subjects did not and become more paranoid. The effect was not blocked by the anti-psychotic drug haloperidol.[345, 378, 580]





Clozapine is an "atypical" anti-psychotic drug that has had a dramatic effect on the care of schizophrenia patients. Unlike older drugs such as haloperidol and chlorpromazine (Largactil®), clozapine improves both positive and negative symptoms, where the typical drugs only improve positive symptoms. Clozapine is also far less likely to have side-effects on the control of movement. Unfortunately, however, the drug has an Achilles' heel due to some of its other side-effects, and the search continues for better medicines. The first task is to find out just what clozapine does in the brain that makes it atypical. This research is still in progress, but at present there are signs that direct effects on the serotonin system combined with indirect effects on the glutamate system may underlie its success. This has led psychiatrists such as Rick Strassman to reopen the books on the LSD model of schizophrenia, which he has been re-exploring using the much shorter acting and less controversial LSD-like drug DMT.[574–8] LSD and DMT mainly bind to serotonin receptors.

There is no drug yet known that can put a sudden end to a true episode of schizophrenia, although there are drugs that cause abrupt sedation, an effect often confused with a reduction in psychosis. This may explain a report that clozapine could blunten the response of schizophrenia sufferers to ketamine.[376] Clozapine is much more sedating than haloperidol. However, further evidence has appeared for a specific clozapine-related effect.[122] This is exciting because if clozapine does actually block ketamine experiences in a way haloperidol does not, other than by being more sedating, this may yet provide an im-

portant insight into how clozapine works as an atypical anti-psychotic that has fewer long-term side-effects and reaches the parts that the "typical" haloperidol cannot reach. Discovering why clozapine is atypical will provide clues for the development of better medicines than we have at present. The general direction of these studies is towards a conclusion that drugs having the opposite action to ketamine, *i.e.* drugs that enhance transmission at N-P receptors rather than blocking the transmission, may be useful treatments in schizophrenia. If ketamine does "retune the brain to quantum realities" then atypical antipsychotic drugs could turn the dial back to the social consensus reality. These studies have already led to new treatments for mental illness with pro-glutamate "anti-ketamine" effects.[18]

To support the ketamine model of schizophrenia, it has been noted that the drug is most effective at producing psychedelic effects in young adults, the same age group in which schizophrenia usually begins.[136] However, while females of all species are more sensitive to ketamine,[20] it is young, male adult humans who are more likely to develop schizophrenia. The peak age of onset in females is at least 5 years later.

Many of those who have experienced ketamine journeys scoff at the comparison with psychosis and counter with a claim that this is "scientific madness" and that it is the scientists who are deluded. Nevertheless, these studies may still tell us much of value about the mind and brain, in both healthy and unhealthy states, and are pointing the way to new treatments for people in distress. Also, some ketamine users do eventually choose the word "insanity" to describe their journeys.

### Can Ketamine Cause a True Drug-induced Psychosis?

A drug-induced psychosis has been defined as one where the psychosis starts during intoxication and is still present when the urine is clear of all drug break-down products (with ketamine, the psychosis would need to still be present two weeks after the last dose). The psychosis should only recur on re-exposure to the drug and not at any





other time, and must have a different course and outcome from schizophrenia and manic-depression.[479] Some doctors doubt that any kind of drug can produce such a condition, including amphetamine. A 1958 report is often referred to by those who do believe in amphetamine-induced psychosis.[79] However, this report actually concluded that amphetamine psychosis only occurred with intoxication, confirmed by measures of amphetamines in the blood. The psychosis resolved as the urine cleared, a process taking up to a week.[479] Where it does not resolve, long-term follow-up usually finds schizophrenia or manic-depression.

Psychosis lasting for more than a few weeks is often now seen as being due to inherited genetic and fetal brain problems. Even those who are still keen on "families" as a cause agree that such factors must operate for many years. It seems extremely unlikely that a psychedelic drug could produce the changes required for a lasting psychosis, no matter how extreme the experience itself may be. There are certainly people who become paranoid whenever they take a drug, even after a break of several years, but they do not stay paranoid as the urine clears unless they have some other underlying illness. The strongest evidence that a drug can cause a lasting psychosis probably exists for alcohol, where chronic use is linked with alcoholic hallucinosis. However, even this condition is controversial, and there are those who argue that the diagnosis is actually schizophrenia, especially as about 17% of persons with schizophrenia are thought to be alcohol-dependent. Alcohol may be one of the few drugs that can cause the level of actual organic brain damage required to produce a chronic psychosis.

### "Spiritual Emergencies"

The Grofs have defined a "spiritual emergency" as a state where part of the mind becomes engaged in a transpersonal level of being at the expense of function in the everyday world.[196–7] Since modern psychiatry does not distinguish mystical/spiritual states from psychosis,

people in these states may be diagnosed as mentally ill. The usual approach is to attempt a retuning of the brain to the social consensus reality using medicines. A few psychiatrists believe that skilled therapists can use the opportunity to achieve a deeper healing in the affected person, which has been claimed to result in "spiritual opening" and some positive personality changes.[198] Jung's personal "night sea journey" is sometimes given as an example of such a state.

> Madness is not enlightenment, but the search for enlightenment can easily be dismissed as madness.
>
> **Martin**
> *Asylum* (1996–1997)

### Ultra Violence?

PCP, the dreaded "angel dust" of tabloid fame, became linked with violence in the American media of the 1970s and early 1980s. Some users were angry, violent young men with criminal records, living in deprived inner city ghettos. So far, ketamine has not usually been linked with violence. Between 1970 and 2000, most users were educated, affluent, middle-class, and non-violent in nature, very different from a PCP "crystal-head." It is likely that there will be more reports linking ketamine with violence as the drug becomes more democratic in its user profile. At low doses, ketamine does have stimulant properties, and stimulants have been linked with irritability, aggression, violence, and mood swings.[201] A pre-existing inclination to violence may be increased by the stimulating effect of a drug. Many homicides would not have occurred had the murderer not taken alcohol, crack cocaine, or amphetamines. Ketamine is sometimes taken together with these three drugs, and this might increase the risk of violence. Doctor Tantra, interviewed by Rameses Sputz, recalls having to hold a user down to prevent them from becoming violent.[563] Here is an account from my own information-gathering studies:





I am a 24-year-old from New York. I have been a K user for 3 years. I got involved with it through the club scene. A few months ago I was a heavy user as well as a distributor of K. I had an unlimited supply and could escape to "the other side" whenever it was convenient. My family became aware of my activities and my girlfriend and I were having a lot of problems. It was during this period that I began using K every 3–4 hours, 0.5–1 cc i.m. This was enough to keep me in a state where I did not have to face my problems.

I was kicked out of my house and my friends began to think I was going insane. I would go days without sleep and would behave in a very unpredictable manner. I was now a ticking time bomb waiting to go off. While under the influence I was able to speak and think in an intellectual manner that was very surprising to the people around me, but not to me. I had done my homework before diving into this self-destructive pattern of behavior. I am a very intelligent person who graduated from college with excellent grades.

My parents were very concerned so they tried to get me help. The K made me believe that nobody would understand what I was going through unless they had first-hand experience with using ketamine. During this time there were incidents that led me to seek professional help. One day my girlfriend approached me after I had taken a 1 cc injection i.m. She began to argue with me about the way I was treating her recently. I became increasingly irate as the "K" began to take full effect. Before I knew what I was doing I slapped her and told her to get the hell out of my house. She lunged at me and I threw her into the wall with a roundhouse kick. I was not thinking clearly now at all, but I had total body control. We began to fight and I proceeded to bruise her up pretty badly. I couldn't help

it. After the altercation I tried to apologize, but the damage had already been done. I never hit a woman before in my life and I couldn't believe what I had done.

Two nights later I had become very upset with my present situation and I decided that I would inject 3.5 cc i.m. to put myself into an extreme state of dissociation. After about 5 minutes I entered my friend's room and started describing to him how I was feeling. I started to become aware of God's presence in the room and I believed he was communicating with me. This divine experience turned ugly when I became overwhelmed with the idea that my friend was a demon sent by the devil to promote evil and destroy me. I had a strong sense that I was chosen to rid the world of this evil being who did not appear to me as my friend any longer but took on a dark and sadistic look which caused me to become angry. I began to look for things in the room that I could use to protect myself and I got up and grabbed him by the throat and told him that I was sorry I had to do this. He stood up to me, realizing my mental state and told me to sit down and relax. I listened and then I had an experience that has changed my life forever. I felt a high even higher than the K had taken me. I truly heard, not in words but in feeling, that God was asking me what I was doing and is this the person you want to become? This may or may not have been a divine intervention experience but it was real enough for me to go home that night and cry to my mother for help with my problems. It was not enough, however, to break the psychological addiction it had over me. I continued to use K for another week and was kicked out of my house again. I went to a motel room where I was more comfortable because I was away from everybody. Finally, I came back to the area and my friends convinced me to get my life together and go home. I was very depressed and





had thoughts of death. Instead of actually dying I could cause a NDE by injecting K and I would somehow feel better. I also felt that I was at a higher cognitive level while under the influence of ketamine. I could speak very intellectually and had no problem conveying my thoughts at lower dosages.

Although it may sound like I'm some kind of lunatic, I'm not. The rest of my life has been very normal and I am not prone to violence or aggression. That is why my actions took my family by storm. Up until the last 6 months I had never injected K. We would always snort it and the effects were much less volatile. I never had a real dependence on it until I started injecting.

**K.U.**

### Other Sides of the Dark Side

There may be problems in relationships with other people, difficulties at work, economic difficulties, educational problems, involvement in crime, and being a victim of crime.

I was a very good thief when I was on K; it allowed me to steal things almost instinctively from other club-goers. I had a very strong awareness of other people's feelings and intentions on K. K brought out my dark side. I was able to manipulate people better when I was K'd. I noticed around the clubs that everyone fought over K and real friendships were actually ruined by it...

**K.U.**

### Treatment

While the person is still affected by the drug, there are three main approaches to mental distress: doing nothing (which is the usual approach, as ketamine is short-acting and most people recover while

waiting to see a doctor), talking down (non-judgmental, verbal reassurance in a quiet place), and medication. If alcohol, opiates, sedatives or tranquilizers are also involved, issues of physical well-being come first. These may involve nursing in a special unit.

Because of the link between traumatic drug experiences and later problems, it is sometimes better for the doctor to consider lorazepam or diazepam to relieve anxiety, if the physical safety issues discussed above are acceptable, than to try talking down. There is a view that a person may profit by a "bad trip," walking through a valley of suffering to achieve enlightenment. However, the ethics of this approach are very doubtful where the person has not signed up for a "night sea journey of the soul," is actively seeking help, and (perhaps of greatest importance) where there is no pre-existing therapeutic alliance with the doctor. It is generally better practice to ensure safety, relieve suffering and reduce the risk of after-effects by minimizing trauma.

Antipsychotic drugs such as haloperidol are best avoided. These drugs have many unpleasant side-effects that may be additive with those of ketamine, especially on movement, and additive with any other drugs the person may have taken. They are long-acting and if given in error, the mistake is irreversible. It is not always understood that the antipsychotic effects may take several weeks to appear. It is usually safer to use benzodiazepines (*e.g.* lorazepam, 2 mg i.m.), which have a shorter action, relieve anxiety, and have fewer side-effects. The range is wide enough to render antipsychotic drugs largely irrelevant and outdated for acute emergency treatment.

A "ketamine-induced psychosis" should not be diagnosed simply because a psychotic person has also been using drugs. It is best to avoid jumping to hasty conclusions. If the urine is clear of all drugs and their metabolites, the mental state is unlikely to be drug-induced. If there is no underlying illness, problems of this type are short-lived so it makes sense to calm the person with benzodiazepines for a few days and await further developments.

For some persistent problems, approaches not involving medicines





are a good long-term investment, avoiding side-effects and placing control inside the person rather than outside. It should be possible for most people to at least buy a self-help book on overcoming anxiety, panic attacks, depression, and insomnia. This allows the sufferer to take more responsibility. It is better to buy a book on achieving natural sleep from a health food store than to take pills, but they do sometimes have a limited place.

Many of the methods discussed in the last chapter as treatments for dependence are also worth exploring to treat some persistent drug-triggered mental health problems. These include psychotherapy, meditation, physical exercise, and bodywork. Meditation to deal with mental after-effects, rather than dependence, should focus more on traditional "mind-emptying" than on creative visualization. Where there are difficulties with attention and concentration, it may be valuable to learn to attend to a single stimulus such as breath counting. Martial arts are also useful for strengthening the "signal to noise" ratio.

> If you get into these spaces at all, you must forget about them when you come back. You must forget you're omnipotent and omniscient and take the game seriously so you'll engage in sex, have children, and participate in the whole human scenario. When you come back from a deep tank session—or coma or psychosis—there's always this extraterrestrial feeling. You have to read the directions in the glove compartment so you can run the human vehicle once more.[364]
>
> **John Lilly**
>
> (from a 1975 California Institute of Technology lecture)

Chapter 9

## The Body Electric: Physical Effects and Harm Minimization

*My friend put her hand to sleep for three months from doing a huge line of Ketalar®. I think it's dangerous…*

**K.U.**

Everything that people do, from horse riding to heroin, has a risk profile: so many people per million will have a headache, so many will become unwell, and so many will die. Whether something is safe or not depends on what we consider to be an acceptable level of risk. There are no absolutes. For example, many governments accept a very high level of risk for boxing, including a risk of permanent brain damage, but consider the risks from smoking *Cannabis* to be unacceptable. These attitudes are reflected in the different legal status of the two entertainments. The risk of dying while horse riding has been said to be about the same as the risk of dying from taking the "killer-drug" ecstasy.[518–9] Attitudes, as well as facts and statistics, define safety. Safety also depends on answers to the who, what, why, where and when questions. What is safe in a hospital may not to be safe at a club, and many things that are safe in a club are certainly not safe in a hospital.

From the medical point of view, ketamine has a good record relative to other drugs.[184] A standard club "bump" results in much lower blood levels than the i.v. injections used for surgery. At psychedelic doses, ketamine behaves more like a stimulant than a sedative, increasing the heart rate and breathing. The anesthetic is widely used in developing countries as it is considered safe enough to be given by paramedics where resources are scarce.[183, 308] It does not usually suppress breathing when injected into a muscle and swallowing and airway reflexes are usually preserved. However, the latest data sheet states that a fully trained specialist should be present.[466] There are very rare cases of children who failed to breath for a minute or more following i.m. injection of surgical doses.[183, 185, 557, 600] Doctors give the first i.v.





dose slowly, over at least a minute, as there is a risk that rapid i.v. injection will suppress breathing.[466] Airway problems have occurred at medical doses in very rare cases.[582]

While any drug can cause death in a few people, deaths from Ketalar® in medicine seem to be rare. However, anesthetics are given within carefully controlled settings. Outside this setting, the real physical dangers do not arise so much from the drug itself as from the context of use. An anesthetic leaves the taker far more helpless than most "recreational" drugs, apart from large doses of alcohol. Disconnection from the body can be dangerous in almost any situation other than lying down, and even that has risks such as nerve compression in the arm if the body is lying on it. This caused the quote with which this chapter begins, and is a problem classically linked with an excessive alcohol intake ("Saturday night paralysis"). In a *British Medical Journal* editorial in 1993, I wrote that disconnection from the body can be dangerous in public.[246] These words are still true today, but it also true that most of the deaths from non-medical use, several of which I have discussed elsewhere in this book, occurred when the user was alone (see also Gill & Stajic 2000).

Another death uncovered by my research involved a middle-aged man who had become alcohol-dependent in his twenties. However, close friends and family are certain that he had not been drinking at the time of his death. He worked in animal medicine and started taking ketamine about 6 months before he died, as a replacement for alcohol. His friends told him to stop taking ketamine, but he would say to them that he could "handle it" and make statements such as "I've got a high tolerance for this drug." The coroner stated that vials of ketamine and syringes were found near the body. He died shortly after waking at about 7:00 am. His family had attributed his behavior to his being "paranoid about life in general." This included thoughts about the millennium "Y2K" computer bug that they interpreted as delusional, delusions of grandeur, and a constant obsession with his childhood, religion, and God. In December of 1999, a close relative said, "It is frightening to hear about a drug, whose existence I've never

heard of, that probably ended our brother's life. It would seem that if this is a 'party' drug we would have heard about it." He appeared to be physically healthy at the time of his death and was not known to be taking any prescribed medication.

### What is an Overdose?

Like safety, overdose (OD) is a relative term. If a person intends to kill himself or herself, then any dose that fails to kill them is an underdose from their perspective. A "bump" of "club K" would be a serious underdose from a surgical viewpoint. Some people consider any psychedelic drug use to be an OD, as the mind is no longer within their own prescribed limits of normal.

> There have been several hospitalizations in the North West (U.K.) over the past few months, people who entered catatonic states after taking what they believed was E but what turned out to be K. Last week, I was told about a club that closed an hour and a half early, because the organizers were so freaked out by the number of collapses…[402]
>
> **Peter McDermott**
> *The Face* (1992)

Those who took pills and could no longer walk were described as having taken an OD in the media, although the blood level would have been far lower than that routinely used in surgery. The difficulty with walking was interpreted as a "collapse" in the sense that a person who is having a heart attack collapses, and these users were rushed to hospital as emergencies. However, in New York clubs such as Twilo, ketamine users on the floor were a familiar sight before the Mayor's big clean up. Parke-Davis notes that patients have been given 10 times the anesthetic dose without serious problems.[466]

It would be necessary to take a very large number of pills to reach the levels of ketamine in the brain (as distinct from norketamine) routinely used in medicine. If a person took 5 pills instead of one, they would be in an altered state of being for a longer period of time but the risk from any directly harmful effect of the drug on the body would still be low. There are certainly more physical complaints from pill takers for reasons discussed elsewhere. These pills are still common in Europe where they are sold misrepresented as MDMA:

> My only experience of ketamine was when I was sold it as E…The first "E" I took actually. It was in Germany, and I spent a number of hours in what felt like a rubber sack, and I really didn't want to deal with anything, least of all the full-on techno playing. It wasn't pleasant, but only because it wasn't what I was expecting…can't imagine what it would be like to do for fun but I personally wouldn't.
>
> **K.U.**

So to answer the question, "What is an overdose?," we need to know the purpose for which the dose is intended; the location; the route (by mouth, nose, vein, muscle, rectum); who the user is (age, size, sex, tolerance, health, history), other drugs taken at the same time (especially alcohol), and so on.

### Route 666

Snorting powders can eventually damage the linings of the nose and impair the sense of smell. Injecting carries a risk of hepatitis, HIV and other infections if shared or unclean equipment is used. A heroin-dependent person injected ketamine i.v with her friends. They did not share needles, but they did pour the liquid into a bottle cap and everyone would put their needles into the common pool. This practice may be responsible for the spread of hepatitis C in people who say that they don't share needles. Hepatitis C is common amongst heroin injectors and is expected to cause a large number of deaths from liver cancer, what with about 160 million carriers world-wide, and rising.

### Falls

Difficulty with walking and balance resulting in falls is a common problem:

> I have tried K about 3 times but it was not for me. My life flashed in front of my eyes. I'm writing to you because my girlfriend enjoys using ketamine. I'm at the point that I cannot handle it. It might cost us our relationship. Just this evening I took her to her friend's house and when she came down the stairs she fell down and hit the floor. I knew she was in a "K-hole."
>
> **K.U.**

### "K Pains"

A girlfriend describing her ex-partner's problems after 8 months of daily use:

> It was around this time that he started getting the pains in his stomach. They were very severe, and would come on at night if he did K all day, or the next day if he did K all night. He would cry out, moan, push on his stomach—he said it felt like severe gas pains, but much worse. The pains were incapacitating—many of our friends also suffered from them and actually went to the hospital on one occasion…also, some of our friends also experienced urinary tract infections, blood in the urine, *etc.*, that caused them trips to the hospital. These were also said to be from K, although they could very well not have been, because my boyfriend never experienced any of these symptoms.
>
> **K.U.**

The math professor who injected large quantities for 10 years also reported severe abdominal pain. In his opinion, these pains do not





appear until the person is injecting at least a gram a day, and the pain responds well to tyrosine, available from health food shops. The cause of the pain is mysterious as it appears to be confined to non-medical use. Gut function is an important issue in intensive care units, so the effect of ketamine on gut function has been studied in detail. The conclusion is that ketamine does not interfere with normal gut movements, and is actually the analgesic of choice in patients with severe head trauma who need deep sedation, and have gastrointestinal motility disorders.[631]

Considering the whole picture, it is possible that "K pains" are a form of irritable bowel syndrome. This is a condition where there are bowel symptoms without underlying structural pathology. In other words, the condition is a psychiatric disorder. It is probably the physical expression of emotional distress that is either a result of opening doors into the unconscious (*i.e.* a neurotic symptom felt in the body rather in the mind as anxiety or depression), or a result of the stress and distress linked with ketamine dependence. The evidence is currently not in favor of "K pains" having an organic basis, although this may change as we learn more about them.

### Spasms, Twitches, and Fits

A 20-year-old man, who had used ketamine before, gave himself an i.v. injection. 10 hours later he attended a hospital with his tongue sticking out, rigid and pointing to the left, and his neck bent backwards and to the left because of muscle spasm ("dystonia"). He was unable to speak but could still write. He was given diphenhydramine, resulting in a complete cure within 3 minutes.[145] Haloperidol can also cause dystonia, which is an important reason why it should not be given to persons who have taken ketamine. Ketamine has been used to produce an animal model of another movement disorder caused by haloperidol: tardive dyskinesia.[386]

There are very rare reports of ketamine both causing epileptic fits,[586] and being used to stop prolonged fitting.[578] The trance-like condition

caused by ketamine can be misinterpreted as "absence seizures," which also involve a switched-off appearance. This is the view of some doctors who believe that ketamine is not likely to produce epileptic fits in humans.[341] One person I spoke with thought that she may have had brief fits on 5 occasions after multiple i.v. injections. However, there was no evidence of incontinence or a bitten tongue, and these were clearly not major fits in which there is generalized jerking of the whole body. On "re-entry" there were sometimes waves of fine tremors throughout her body. Slight muscle twitching could continue for several days after a binge. She had no history of epilepsy. It is possible that these episodes were not fits at all, but rather drug-induced loss of consciousness followed by a panic attack on re-entry. Some reported "fits" might have been a misinterpretation of "normal" ketamine effects that do bear a close resemblance to epilepsy: a sudden trance, abnormal movements or collapse, and disorientation combined with agitation.[341] What ketamine does depends to some extent on the state of the head it enters. It probably has epileptic-type effects in a very small number of chronic heavy users, and anti-epileptic effects in the majority. I have encountered no cases of "grand mal" seizures that did not also involve amphetamines and/or cocaine. Recent animal studies have usually favored a conclusion that ketamine is anti-epileptic.[108, 114]

### The Eye

While a person is affected by the drug, there may be blurred, double or "slipping" vision (described by a ketamine user as "the vertical hold failing on a TV"), and/or roving movements of the eye from side-to-side. Some of these eye movements have been compared with those that occur in some types of schizophrenia.[483] Very rare side-effects include problems with the pink area inside the eyelid and the white of the eyeball, and swelling around the eyes. Serious abnormalities involving the retina have been noted in some animal models,[14, 15, 154, 338, 374] but these usually involve combinations of ketamine with toxic chemicals in experimental situations of doubtful relevance to human use.[521]





At least one of the drugs given with ketamine in these experiments, xylazine, has been shown to be responsible for the toxic changes.[54]

There has been one report of transient blindness, which may have been psychological ("hysterical" blindness).[152] Ketamine has been said to increase pressure inside the eye.[16, 466] This is a controversial claim. However, consider this account:

> When I was in the midst of my use, I had my eyes examined and found that there were changes consistent with glaucoma (cupping around the optical nerve). I had no elevation of eye pressure or blood pressure. The clinical picture was consistent with intermittent elevation of optical pressure. Since that time, my eyes haven't shown any evidence of progression. The only explanation that I can come up with is the ketamine.
>
> **K.U.**

### General Physical Issues

There may be numbness, sweating, tears, a hoarse voice, slurred speech, rapid breathing, sudden jerky movements, swallowing, chewing movements, and dizziness. There may be a cough, rashes rarely appear at the injection site, and headaches may occur. Excessive urination was reported in a patient receiving an infusion for chronic pain. This stopped when the infusion was stopped.[515]

There are many studies looking at the effects of ketamine on immunity, as this has important implications for wound healing and infection. I do not intend to review this issue in detail. On balance, the majority of reports found no impairment of immunity, and a generally better performance in this respect than most other anesthetics.[101, 330, 503] For example, there was no effect on the function of anti-bacterial cells at 10 times the anesthetic dose.[445] However, a persistent minority of studies continue to report impairments.[218] The rate and quantity of these negative reports is sufficient to warrant a conclusion that the last word has not yet been said on ketamine and immunity. This is

especially true as some of the research is in "experimental models" rather than human non-medical users. Taking ketamine involves stress, late nights, and high cortisol levels, and all of these are linked with decreased immunity.[98]

In very rare cases, ketamine has been linked with a marked rise in temperature but this is highly controversial,[179, 473, 487] as it has been used without incident in patients who had previous episodes of overheating from other drugs, and the finding is not supported by animal studies.[107, 356] The general conclusion now seems to be that ketamine does not cause over-heating. Nevertheless, I have reports from people who became very hot while taking ketamine at home on their beds—not to the point of there being "something wrong," but certainly to the level where others noticed how hot they had become.

There have been rare cases where the heart rate fell and very rare cases of problems with the heart rhythm.[52] When given i.v. there is a modest rise in blood pressure, which returns to normal within 20 minutes. There is no evidence of damage occurring as a result. Higher doses do not usually push the pressure up any further. There is no evidence that people with a high pre-operative blood pressure are at greater risk of post-Ketalar® pressure rises. There have been very rare cases of dramatic rises unrelated to dose, when over 1 mg/kg is injected, and also of low blood pressure.[588, 620–1]

## Harm Minimization

> I wouldn't drive either. Me and two friends got fried on this and drove to get some cigs. We took a turn too fast and did a 180 and ran into the hill next to the road…
>
> **K.U.**

> Equally important is that one not undertake any bodily activity that could be dangerous while on Ketamine … The normal





> reaction abilities that protect us from accidents and death are suspended…
>
> One of the safest methods of taking Ketamine is to have a friend or "sitter" present when one takes it.[591]
>
> **D.M. Turner** (who died alone in a bathtub)
> *The Essential Guide to Psychedelics* (1994)

The harm minimization approach accepts that some people will continue to take drugs regardless of any dangers involved, and regardless of how many times they are advised not to take them. The approach is based on the hope is that there is some level at which the user will follow advice and accept help, even if they will not abstain. This help can extend as far as a heroin prescription in some countries.[81] The advice usually includes methods for taking drugs in a safer way.[140, 570–1] One of the triumphs of this approach has been a reduction in the spread of HIV. It was accepted by some countries that people will not "just say no," and that concentrating upon law enforcement and moral posturing was not actually reducing drug-related harm, and was not reducing drug use.[140, 570–1] These negative approaches sometimes served the needs of those engaging in them, more than the needs of those at risk or the interests of public health.[67, 303]

In the harm minimization approach, to prevent the spread of HIV it was considered helpful to provide clean needles and free condoms. Providing clean needles raised the specter of being seen to condone drug use, and providing condoms as being seen to condone promiscuity. However, countries that provided needles and condoms at an early stage now tend to have lower rates of HIV and hepatitis amongst drug injectors, in comparison with those that promoted abstinence,[140] where the only specters rising are those of the dead.

As a result of its success, harm minimization was extended into other areas. Street drug agencies began to produce leaflets on safer dancing, advising ravers and clubbers on how to avoid problems with MDMA rather than simply telling them not to do it (advice that would

often be ignored). DanceSafe, a nonprofit organization geared towards harm minimization, provides drug-testing kits at raves and via their web site (www.dancesafe.org), which potential consumers can use to get some idea of what might be in the pill that they bought. This organization also presents photographs of various street drugs sold at raves and nightclubs, and identifies what the contents were for the specific pills.

Many agencies now have leaflets about "Special K," some of which are more accurate than others. The commonest mistakes in these leaflets are claims that ketamine is a "downer," as it is more likely to act as a stimulant, to focus on "overdose" (usually not an issue) and vomiting (not as common as often claimed, unless the user has been drinking), and not to mention that the main danger is falling over. However, high frequency users can become over-confident and very full of themselves, and may have a tendency to ignore any advice on the basis that they know far more about everything, and ketamine in particular, than other people do. They feel that they are a special case. They may even feel inclined to give advice to others from which they themselves may be excused, as in the cases of D.M. Turner and John Lilly. Advice given to them is often ignored, especially after the first dose takes effect. Nevertheless, some basic harm minimization advice will be stated here, in the hope that some good may come of it.

The only way to have no direct risk from a drug is not to take it. There is still indirect risk, such as being injured by a drunken driver. Once the decision has been made to proceed, the next step in reducing risk is to take the smallest dose required to provide the desired effect, by the safest route in the safest possible setting. Injectors should not lightly dispense with the instructions for medical use. Some people take doses resulting in anesthesia, especially by the more dangerous i.v. route. The latest data sheet states that Ketalar® should be given by specialists in hospitals with resuscitation equipment on hand.[466] Those who think that the drug is always very safe should take note.

If ketamine is taken by a rapid i.v. injection, it can sometimes cause the person to stop breathing for a short time (up to a minute). 2 mg/kg





given i.v. as a fast injection produced a significant fall in blood oxygen lasting about 10 minutes.[633] When given slowly (over 1.5 minutes), breathing is well maintained and may even increase slightly. However, the self-injector may then pass out before the injection is complete, collapsing with the needle still in the vein and the tourniquet still on.

The airway is usually well maintained, but there have been very rare exceptions.[184, 582] If a sedative is taken at the same time, the risks of suppressing breathing and airway reflexes rise sharply. These drugs include alcohol, diazepam, temazepam, other sleeping tablets, all opiates, and all barbiturates. Ketamine is not usually given to patients who have recently had a heart attack or who have severe angina, because the heart must work harder. It should be avoided in glaucoma.

An empty stomach will reduce the risk of nausea and vomiting. Some people believe that smaller amounts will have the desired effect if there has been a day of fasting, as this is said to "loosen the moorings to the everyday world."

Any desire to experiment with i.v. use should be resisted for as long as possible. As noted above, ketamine does not usually suppress breathing, but exceptions occur after rapid i.v. injection. This is safer when the person is lying down, or at least not sitting on an edge. Bathrooms are dangerous because the surfaces are hard and angular, there is a risk of drowning, and bleeding is more likely in warm water. If syringes cannot be purchased easily, the risk of disease can be reduced by acquiring knowledge of needle/syringe exchanges and proper sterilization methods.

### Harm Minimization and Ritual

Psychedelic drugs played an important role in some pre-industrial societies. However, these cultures did not have "drug problems" with psychedelics because the drugs were treated with reverence, and taken in a ritualized, sacred, and socially approved or socially demanded manner, usually under the guidance of a shaman who was both priest and doctor.

The loss of ritual, which includes basic safety procedures, may be an indicator of problem use. Moore's first experience involved a great deal of preparation:

> Towards the end of the afternoon the three of us drove to Big Sur's world-famed Esalen Institute where we luxuriated in the outdoor mineral baths while watching the sun sink over the sea and the stars come out. As the darkness deepened Jane lit candles and incense and I was reminded of the purificatory bathing rituals said to have been practiced in the legendary temples of Greece, Egypt, and Atlantis…[423]

However, Moore's drug use rapidly lost any sense of ritual as she became dependent. She later describes taking the drug while watching television. A loss of basic safety ritual is described in *The Scientist*, when Lilly abandoned the "first prime directive: Vitamin K should not be taken alone."[363] A possible harm minimization step is thus to re-establish safety rituals where they have been eroded, if there is no intention of stopping use completely:

> We may define "ritual" as the set of tools used to create a religious, mystical, healing, ecstatic, shamanistic or magickal experience. These tools include the environment of the ritualist, that is, where the ritual takes place and how that place has been manipulated for the purpose of the ritual; the auditory components of the ritual, including words, music and rhythmic components; the olfactory and gustatory components of the ritual, including such things as incense, ceremonial foods and beverages. The tools of ritual also include ideological and doctrinal components, as well as methods to produce altered states, exalt the ritualist, or produce states of ecstasy…The purposes of such ritual, in history and in present use, are to create religious or mystical experiences, to eliminate or create





> conditioned responses, and provide initiatory experiences or rites of passage through various stages of life.[138]
>
> **Phillip Farber**
> *Psychedelics and the Art of Ritual* (1996)

### Oral Issues

Ketamine pills can start very quickly in a person with an empty stomach, sometimes in as little as 10–15 minutes, much faster than most drugs taken by mouth other than alcohol. It is very dangerous to swallow a pill and then to start driving somewhere thinking that there is enough time to reach the destination.

> I guesstimated and took 4 ml of Ketaset® (400 mg ketamine). I had an empty stomach. I took it orally, pouring it down my throat with a spoon—I had heard it tasted awful, which it did…I was surprised, and a bit scared, when I got the first whoosh of effect already 15 minutes later, and 5 minutes after that I was totally gone. This was scary because I had been assuming that, like LSD, or X, or mushrooms, or orally ingested *Cannabis*, there would be a gradual increase of the effect over the first couple of hours and I was worried that I had taken way too much, since I was feeling so much so soon. What I was feeling at this point: very disoriented, normal reality had just disappeared, physically dizzy and unable to walk without bumping against walls…I went out on the balcony in a T-shirt (very cold day)…I was a bit irked at this point that my housemates weren't looking out for me more closely, since although I wasn't about to do it, I felt that jumping off the balcony wasn't that bad! (In all fairness to them, they really didn't know it was affecting me yet, this was only 15 minutes after I took it.)
>
> **K.U.**

However, oral doses can also take over an hour to work, especially if there is food in the stomach. This time delay can lead to taking more pills, in the mistaken belief that the pills must be weak. Pills result in more physical effects that will last longer.

Benzodiazepines slow the breakdown of ketamine in the liver. They increase problems with memory, attention, and coordination.[489] If these drugs are taken at night to go to sleep, there will be more confusion the following day. They are also addictive.

### Other Points

It is dangerous to have anything burning, such as a cigarette, as this could be dropped, igniting clothes or bedding. Driving to the place where the drug will be taken makes it more likely that the car will be used to drive home. A taxi both ways is safer. A calm environment with lighting levels that are low but not off, will reduce the risk of panic. The risk of an accident will be less if the need to move is minimized. This can involve CDs at low volume, as music can suddenly seem very loud, leading to a desire to change it. Movement before full recovery increases the chances of nausea and falls. Feelings of nausea recede if the eyes are closed, movement avoided, and there is no noise. It is safer to be lying down, to have another person present, and to avoid all public places. Obtaining a large supply increases the risk of becoming ketamine-dependent.

There may be a state of high suggestibility.[307] Some of the ideas that may be accidentally implanted could be dangerous. Those who are determined to go down the Jim Morrison path to "The End" will not be moved by this advice, but others should note that music, people, and settings with a strongly death-oriented and despairing quality may program the dissociated mind in a harmful way.[112, 523, 550]



PART III

# Unity

*And now may it may be expected that the other two of the "heavenly forces," eternal Eros, will put forth his strength so as to maintain himself alongside of his equally immortal adversary…*

**Sigmund Freud**

*Civilization and its Discontents* (1930)

Chapter 10

# Psychedelic Healing, E Pluribus Unum

Over the past 15 years, ketamine has been given to over 1,000 patients in St. Petersburg as an aid to psychotherapy for alcohol dependence. Long-term follow-up of patients has been encouraging when compared with the progress of control groups. The treatment has been extended to persons dependent on heroin and those suffering from PTSD. No patient has had complications such as prolonged psychosis, flashbacks, or non-prescribed use of ketamine.[332] This work has been carried out by psychiatrist and laboratory chief Evgeny Krupitsky, M.D. and his team. He was recently awarded an honorary Doctor of Science, spent a year with Krystal's team at Yale, and has given lectures about ketamine psychedelic therapy (KPT) sponsored by the National Institute of Drug Abuse.[442]

KPT has developed over time. In one trial where all receiving treatment were male alcoholics, all subjects went through the first step, which involved 3 months in hospital. Anxiety and depression were treated, as well as physical problems. Individual and group therapy took place to foster negative attitudes towards alcohol, and to examine wider issues involving personal history, relationships, and general outlook. The KPT was then offered to the pantients. Some volunteered for KPT and gave written consent; those who did not volunteer for KPT became the control group. The KPT group were then told that they would undergo a treatment that would allow them to see and feel the deep unconscious roots of their problems, to realize the negative effects of alcohol and the positive aspects of recovery, and to have insights into their values and sense of who they were (their self-concept). They were told to expect positive changes in their personality that would help them to become sober, and that they might have out-of-body experiences, which they should not resist.

A therapeutic myth was individually tailored, arising out of discussions between patient and therapist, and was given some specific features linked with that person's own motives for treatment, the goals that he had for his sober life, his idea of the cause of the alcohol dependence and its consequences, and his view as to what was blocking progress and what was aiding it. This myth was the tale of how the problem arose and how the person would recover. Developing this myth fosters a sense of trust and mutual understanding.





Stage 2 was the session itself, involving injections of aethimizol, bemegride, and then ketamine i.m. at doses of 2–3 mg/kg. Persons with alcohol dependence can require higher doses, and the other two drugs are stimulants that allow much higher ketamine doses to be given without loss of consciousness. Otherwise these doses would be excessive. The bemegride and aethimizol improved memory of the experience. Both drugs prevented loss of consciousness, and sometimes permitted a therapeutic dialogue to take place. This was aimed towards improvement in personality problems, a new purpose in life, and emphasizing the positive aspects of sobriety and the negative aspects of alcohol dependence in a personalized way.

An attempt was also made, via words and manipulation of the background music, at symbolic resolution of conflicts and a final catharsis. During intense moments, the patient smelled alcohol to strengthen the negative emotional coloring of the alcohol themes. Two physicians, as well as a psychotherapist and an anesthetist supervised sessions. At these doses, a return to normal usually began after 45 minutes, with a recovery period of 1–2 hours. Discussion and interpretation took place, and the patient wrote a detailed account that evening.

Stage 3 involved group therapy the following day. People interpreted the personal significance of the symbolic aspects of their session, and made links between these symbols and their own problems to strengthen and entrench their desire for a stable and sober life.

One year later, 66% of the KPT group were dry, 27% had relapsed, and data could not be obtained on the remaining 7%. Most felt that

KPT had contributed greatly to their sobriety. They said that the session was vividly imprinted in the mind as an "inner taboo" against drinking, as if relapse would be a desecration of something holy. In the control group, only 24% were dry, and 69% had relapsed.

On tests of personality change, there were significant improvements on many scales including depression, anxiety, and ego strength. People became more confident about their own ability to control their lives and to accept responsibility. They became less anxious and more emotionally open, mature, and responsible. Changes on different personality tests were in good agreement with each other, and were all positive. There were helpful changes in non-verbal emotional attitudes to the therapist, close relatives, the ideal self, and to "me sober," while the attitude to "me drunk" became more negative. Non-verbal (unrealized) emotional attitudes were brought to the surface and made known, resulting in less conflict between verbal/conscious and non-verbal/unconscious attitudes involving alcohol, the personality and other people. Before treatment, there was often a huge gulf between spoken and unspoken attitudes, reflecting discord between conscious and unconscious elements. This discord might underlie the ambivalence of people with alcohol dependence and others with self-control problems, and explains some of the gap between verbal statements, actual behavior, and immediate emotional experience. The discord results in feelings of inner tension and other problems that can lead to relapse. Reducing this discord via a unifying journey through the unconscious favors sobriety, as there is partial resolution of some key internal conflicts. There were positive changes in self-concept, emotional attitudes, spiritual development, life values, and sense of life's purpose.

The more negative the ketamine experience, the longer the dry period lasted. This was believed to be because the horrors of alcohol dependence were impressed upon the deepest levels of the mind, which are usually walled off and heavily defended. People often deny to themselves the truth about the harm they are doing, driving this out of awareness.





There was also a shift in values towards creativity, self-improvement, spiritual contentment, social recognition, achievement of life goals, independence, and improvement of family and social life. Life became more meaningful, and the ability to live according to that meaning increased.

KPT can reconnect the ego with denied parts of the self. It can also lead to a perception of "reconnection" with "wider fields" such as the family, community, planet, and universe in general—a form of spiritual experience. Changes in spirituality were assessed using scales designed to measure spiritual change in the Alcoholics Anonymous approach,[623] and the Life Changes Inventory developed to assess the outcome of near-death experiences.[497]

"I saw the Light" conversions have a long association with spontaneous recovery from addiction and criminality. The 12-step programs, of which Alcoholics Anonymous is one, have a spiritual orientation and involve accepting the guidance of a "higher power." Whether this is seen as part of the psyche or a separate entity will depend on religious beliefs. Many KPT patients who had rarely considered spiritual issues or the meaning of life had out-of-body experiences, encouraging beliefs that they could exist as pure consciousness or spirit. Some reported contact with what they perceived to be God. This is of interest in view of the atheism with which they were raised in the Soviet Union, although Soviet Communism itself could sometimes be like a powerful religion that demanded surrender of the individual ego to a higher power. At one level, a person's childhood experience of authoritarianism in any form, including an authoritarian parent, could possibly influence the form of certain altered states of being. A person, state, or other institution may declare itself "atheist" while behaving in a manner almost as extreme as the God of the Old Testament. This is one type of behavior that can eventually produce discord between conscious and unconscious elements in the child (*i.e.* the person controlled by the authority). A realignment of the relationship with the "All Powerful Being" within may be required for healing. On a deeper level, the person may achieve a sense of unity by

having a spiritual experience that appears to go beyond their personal history.

Patients who were more intelligent and more sensitive usually had more vivid, colorful, varied, and personality-relevant ketamine experiences that deeply impressed them.[332] We have already noted that persons of higher intelligence currently appear to be more at risk of ketamine dependence. In addition to mental factors, there may be a physical reason for this, related to the number and type of N-P receptors present, as these play a key role in the thinking processes that underlie intelligence and imagination. Doctors in Pakistan noted a link between literacy and the reporting of psychedelic experiences after patients were given ketamine.[95]

The work with alcohol-dependent patients originally had a flaw. The patients were not randomly allocated to one group or the other, but decided for themselves which group they would be in, *i.e.* whether they would choose KPT or not. Those who chose KPT may have been more motivated to succeed. Ideally, persons who volunteered for KPT should then have been randomly split into the two groups. A later study of KPT in persons with heroin dependence used only people who volunteered for KPT, and then randomly allocated them to a group who had a high dose session (2.5 mg/kg i.m.) and a control group that had a low dose session (0.25 mg/kg i.m.). Only ketamine was used without additional drugs. The results showed that a high-dose ketamine experience combined with psychotherapy produced better results in the treatment of heroin dependence than low-dose ketamine and psychotherapy, while the low-dose group still experienced an altered state of being helpful to their recovery.[334]

### Therapy Involving Altered States of Being—A Discussion

It is generally understood that almost any degree of non-harmful alteration from our usual state is potentially therapeutic. Hence we have sayings such as "a change is as good as a holiday." Holidays themselves may involve an altered state of being. This process is





frequently aided by drinking alcohol, exposure to a foreign culture, and a change of setting—in other words, a trip. Even a person who reads a work of fiction is achieving a degree of transcendence, as is the simple daydreamer. Dreaming itself is essential for our mental health, and provides everyone who is able to recall dreams with an experience of an altered state of being.

Why is some degree of alteration potentially therapeutic? One answer is that some symptoms arise from a failure of parts of the mind to talk to other parts, as if they were walled castles with the drawbridge raised. Transcendence of the usual patterns may produce a weakening of these walls so that at least some communication occurs, to reduce inner conflict. Alcohol dependence itself is sometimes seen as a maladaptive search for such transcendence.[83]

The altered state of being is more effective if it appears to be new. If it is entered frequently it may become part of the usual system—part of the problem rather than part of the solution. For some frequent users, the ketamine experience can become one of their "normal" states. KPT may achieve its best results in those that have never taken such drugs, and can accept the programming of the therapist as to what may be achieved in this state. This situation existed amongst the St. Petersburg alcoholics who generally knew little about psychedelic drugs due to their culture of origin. There was no "psychedelic sixties" period in St. Petersburg.[332] In his research with DMT, Strassman observed that those who benefited the least were those who had the most experience of psychedelic realms.[574–8] Even intoxication with alcohol, in a therapeutic set and setting, might be beneficial in someone who had never taken alcohol before, lived in an alcohol-free culture, and was free of expectations and prejudice concerning its effects, beyond a statement from a trusted therapist that the effects may help them.

For a transformative conversion, a single large dose of a psychedelic drug may be given and this is called "psychedelic therapy." A key weakness of psychedelic therapy is that one-off treatments tend to fail in the long-term. It seems likely that the final outcome could be much improved if a course of booster treatments is given, perhaps every 3

months. Episodic maintenance may prevent the backsliding that can occur, even after the most profound conversions, when the usual slings and arrows of outrageous fortune strike at a later time.[202] There is a general movement away from the use of supposedly one-time cures, as the long-term and cyclical nature of most disorders becomes clear. Even electroshock treatment (ECT) is now sometimes given on a maintenance basis, sometimes as often as once a month in an outpatient setting, and anti-depressants are continued for much longer periods than in the past. Psychoanalysis may also continue for much longer than in Freud's day, and there is a view in some circles that it needs to continue almost indefinitely in a few cases.

### Death-Rebirth Psychotherapy

A near-death experience can sometimes be a pivotal turning point, encouraging significant and positive life changes. People who attempt suicide have a subsequent risk of making further attempts at least 50–100 times greater than the normal population. In contrast, suicide attempts resulting in near-death experiences are followed by a reduced risk of further attempts, despite an increased belief in an after-life.[189] Of those who survived a jump from the Golden Gate Bridge and had a NDE, none went on to completed suicide, and all were united in their support for a barrier to prevent further attempts.[504] These findings suggest that the artificial induction of a NDE by safe means, within a therapeutic alliance in an appropriate set and setting, may have positive benefits.[243, 247–9, 283]

Psychiatrist Alberto Fontana Y Col in Argentina also pioneered the use of ketamine for death-rebirth psychotherapy. Fontana Y Col started giving LSD, mescaline, and psilocybin as an aid to psychoanalysis in the late 1950s. He was particularly interested in regression to the womb, the birth trauma, and the near-birth experience, and concluded that these could be re-experienced under the influence of ketamine. The method was said to be highly effective for the treatment of depression and anxiety, and was called "shock therapy" because the patient was





deeply moved in an emotional sense. Like Grof, Fontana described how regression and rebirth could treat neurotic anxiety. He found that ketamine was the most effective substance available to aid this process, allowing a deeper and faster apparent "return to the womb" than could be achieved using other methods.[155]

Igor Kungurtsev was a psychiatrist working with Krupitsky's team in Russia. He has described how the team initially used ketamine to increase suggestibility, so that the therapist could place suggestions of sobriety as deeply as possible into the unconscious. This developed into linking feelings of death and dying with the smell and taste of alcohol. The therapist deliberately induced "bad trips" and gave additional, anxiety-increasing agents. However, the patients reported experiences far beyond the basic re-programming model. This led to a change in direction towards a more transpersonal therapy:

> They began to report that they…were "floating" in strange worlds. Some of them spoke about God…Although we tried to help our patients form negative associations and develop an aversion to alcohol, their experience was more profound and mystical, sometimes with no relationship to our suggestions. At this point, I undertook a series of self-administrations, which completely changed my conception of the ketamine experience…all that remained was awareness; there was no "I" as me, as an individual point of consciousness. [344]

### A Klockwork Orange?

Hypnodelic therapy is where suggestions are put into the mind of a person who has been given lower doses of psychedelic drugs. This is also called re-programming, or brainwashing if the person has not given consent. The CIA experimented with LSD for such purposes.[193] Ketamine may aid re-programming because it specifically induces dissociation, a state that dramatically increases suggestibility.[58] Anesthetists had observed:

> In this study, ketamine has proven to be an effective general anesthetic devoid of acute adverse psychological sequelae and very well accepted by patients. All ketamine "dreams" reported by our patients were pleasant, and no signs of post-operative psychosis were noted. This was the case whether or not any adjunctive medications were used, and whether initial doses of 2 or 1 mg/kg were utilized…a key factor was the preoperative interview in which patients received from the empathic interviewer a confident suggestion that the drug experience would be a pleasant one. The term "dreams" rather than "hallucinations" was used to avoid the unpleasant connotations of the latter word.[551]

Telling the patient to expect pleasant dreams and to hold a pleasant image in their mind as they "went under," and establishing an empathic link with the doctor, were more successful than sedatives in preventing bad experiences. As with conventional psychotherapy, the personal qualities of the doctor such as empathy and warmth had a major effect on the outcome.

The doctors in St. Petersburg had different objectives. They did not discourage bad feelings as these could be associated to the badness of alcohol dependence. Aversive conditioning involves linking very unpleasant feelings with the behavior that the therapist is trying to eliminate. This approach has a bad reputation in the West. It is linked with attempts to "cure" homosexuality in the 1960s by giving an electric shock whenever a homoerotic photo was shown. The method itself was eliminated when it became linked with the unpleasant, violent film *A Clockwork Orange*, amongst other reasons. There is thought to be an element of fascism involved in such approaches, even where informed consent is given. However, treatment-resistant alcohol dependence is a serious and life-threatening illness. More unusual treatments may be worth considering, just as surgeons will perform more dangerous operations when there is more is at stake. KPT can be viewed





as an "operation" for a serious and intractable illness, with a certain chance of making matters better, and a certain chance of making them worse—although it is very unlikely to kill the patient as some surgical operations can do. Costs must be weighed against benefits.

Fully-informed consent is obviously of vital importance, and it should be understood at the outset that patients are being programmed to have a particular type of experience. "Fully-informed" could extend to showing them a trial in action (*i.e.* watching other persons undergoing KPT) and having private conversations with persons who have already gone through the procedure. They could be given this book to read, to help them make up their own mind. Some persons who read this book at the proof stage said that their claustrophobia and fear of "eternity," "hell," and their usual nighttime dreams were such that they would now never, ever take ketamine, although they had considered doing so before reading the book. Others felt that they had problems which might benefit from KPT and that they would consent to it, as the potential benefits appear to outweigh the risks.

Psycholytic ("mind-loosening") therapy involves using small doses of drugs on a repeated basis to aid the release of unconscious material. In the 1960s, the method was believed to be more useful for neurosis while psychedelic therapy was felt to be more suitable for "conversions" in alcoholics and criminals.[193] Krupitsky's group is now exploring methods that involve repeated injection of small doses of ketamine, allowing a constant verbal relationship with the patient. Pre-dosing with stimulants increases the options for therapeutic dialogue.

### Narco-analysis

An abreaction is where the emotion attached to a past trauma is released in a therapeutic setting, often with some re-living of the trauma. This is like "lancing a mental abscess" to remove the "pus." A combination of factors was involved in a 1973 study called "The use of ketamine in psychiatry." 100 patients with a variety of problems were

given psychedelic doses, and the results were considered to be encouraging:

> It activated the unconscious and released repressed memories, while it transported the patient back into childhood with frightening reality, reviving traumatic events with intense emotional reaction. Some had recall of events leading to their illness…Within one year of follow up, nearly all patients had remained well, although 2 required a second injection. The complications were very minimal and included apprehension (2 subjects), nausea (3 subjects) and vomiting (2 subjects). In conclusion, ketamine was found to be a safe psychotomimetic agent.[313]

The authors noted that ketamine could be used as an aid to diagnosis. Altered states of being have long been used in attempts to determine the cause of mental illness, from the shaman, through Freud, to the present day. This approach may be useful in some types of dissociative/conversion disorder, such as hysterical muteness after severe trauma, and psychogenic amnesia. The person might speak while in an altered state, but have been unable to do so previously. Sodium amytal is still sometimes used for this type of "narco-analysis."[324] Freud used hypnosis for similar ends.

Around the world, there are odd pockets of ketamine use to aid private therapy that usually go unpublished:

> I am a foreign student (Italian). I have had sessions with ketamine, with a psychiatrist back home. He administers ketamine as part of his practice, in two ways: 1) As a kind of "psycholytic therapy." He uses it…to release repressed memories, induce "birth experiences," and generally to work with his patients on a psychodynamic level. He doesn't use it on psychotics. 2) He administers it to anyone who is interested in trying the experience, for personal purposes, like self-therapy





> and self-understanding/development…it allows your mind to examine many different possibilities and adopt more original and flexible "mind sets" or points of view…one beneficial effect is to break down established patterns of thinking, beliefs and attitudes, and to enable one to adopt new ones, therefore facilitating change. The change can be either positive or negative, but that has nothing to do with the substances themselves.
>
> **K.U.**

There are several potential hazards in these private situations. A doctor in North America gave clients ketamine as an aid to psychotherapy for 10 years, until a woman with whom he did drug-assisted memory recovery a decade earlier sued him. She alleged that he had sexually assaulted her while she was dissociated. He alleged that she was confusing memories of being sexually abused in childhood with himself in the consulting room, and confusing the two realities. The doctor had no insurance and had to fund the defense himself. This problem may not have arisen if an anesthetist had been present, as recommended in the data sheet, as well as the therapist.[466]

### The "Ketamine Cure"

Ketamine may also benefit mental health via direct effects upon the brain. The drug can produce localized electrical events[341] and may have some effects in common with electro-convulsive treatment (ECT). This is still used in some countries as a treatment for severe depression. Psychiatrists have long known that almost any kind of shock can be helpful in some forms of mental illness, and have historically used a variety of exotic and potentially dangerous methods to bring about a shock. Ketamine has established anti-depressant properties[33, 312, 541, 560] and may be more appealing to some people than ECT.

Intermittent ketamine infusions were used in 1998 to reduce compulsiveness in eating disorders, in a study within the Department of

Medicine, University of Cambridge (England).[411] The authors' main interpretation of their positive results was that persons with eating disorders "forgot" their compulsive behaviors after being given ketamine. The authors did not focus on the psychedelic experience through which they were putting these young women.

Ketamine may be useful in the treatment of dependence for physical as well as mental reasons. It can be as effective as morphine in preventing withdrawal ("cold turkey") when opiates are stopped in an addicted person.[212, 326, 627] A variety of mental and physical factors were probably at work in the following example:

> I used ketamine to come off crack cocaine. Back in 1994 I found myself neck deep in a 400 pound (Sterling, not weight!) a day crack habit. I was 25 years old…I found myself smoking 7 to 10 grams of crack everyday…I realized that I had to do something about this problem. I kept on seeing myself drowning in a toilet, unable to scramble out. So, I went to India, took a bus to Manali, up in the Himalayan mountains. I locked myself away up there…the cold thin air brought on a lung infection…In desperation, I went to a chemist looking for Valium®, readily available without a prescription. The men in the shop told me about ketamine. "You western hippies love it," he said…After 3 weeks I was snorting 6-inch lines of pure keti. I don't remember much about it…the strongest hallucinations I've ever had…Then after 4 weeks of use I stopped taking keti. I'd forgotten about crack…I felt recharged and able to leave my bolthole and rejoin the human race…I haven't smoked crack since 1994.
>
> **K.U.**

### The Back Pages

Through history, altered states of being have played a role in the healing of mind, body, and spirit. This is probably the oldest technique in medicine, dating from the period when the roles of priest and doctor were united in one person (*e.g.* shaman, tohunga, curandero, *etc.*) This person was believed to be able to enter realms, sometimes with the help of psychoactive plants, in which they would attempt to communicate with Gods, spirits, and ancestors for the benefit of the people, and they were occasionally believed to take the ill person into these realms with them. Mental health professionals are now sometimes called "secular priests," their role being likened to the hearing of confessions and ministering to troubled souls. The origins of the word "cure" include both the care of souls and the treatment of disease.[193]





Mind-altering plants continue to play a role in healing in some cultures. For example, the peyote ritual is currently used as an aid in the treatment of alcohol dependence among American Indians. *Hoasca* (containing the drugs harmaline and DMT) is also used for this purpose in Brazil. The belief that inducing such states for therapeutic purposes was a misguided idea of the 1960s, now abandoned due to lack of efficacy and unacceptable risks, requires re-assessment.[195] Some psychoanalysts continue to make extensive use of dream analysis and may hope that they themselves and the consulting room will become part of the client's dream space. There are persons in analysis who sometimes find that the sessions can produce mildly altered states of being.

The use of psychedelic drugs as an aid to healing by doctors in the United States and Europe was not a minor curiosity of the lunatic fringe. Between 1950 and 1970, there were well over 1,000 peer-reviewed publications concerning the clinical use of LSD, in over 40,000 patients. There were more than 30 books published on psychedelic drug-assisted psychotherapy, and numerous international conferences were held. The purposes of such therapy included strengthening the therapeutic alliance, to aid diagnosis, to aid access to memories, and to achieve insight and the relief of symptoms. A wide range of conditions was treated, including anti-social behavior, alcoholism, obsessional neurosis, and the psychological problems of the dying.

Many of the professionals involved were not radical, or even liberal, in their views. This relatively large enterprise had come to a halt by the early 1970s, when LSD was classified as a Class A/Schedule I drug.[3, 106, 193–5, 197–9, 340, 553, 574–8]

New therapies are sometimes greeted with a burst of enthusiasm, widespread and inappropriate use, and extravagant claims. They then gradually find their proper place in the therapeutic cupboard. This final resting-place may be influenced by political, social and ideological factors to a surprising extent. Those who are convinced that international medicine is always rational, scientific, and objective should consider, for example, that electroshock treatment (ECT) is almost prohibited in some countries in continental Europe, while in the United Kingdom and the United States this treatment is still widely and commonly practiced, including against the will of the patient (even though we still don't know how it works, and it has a negative public image). Many people are not aware that even psychiatric brain surgery (psychosurgery) is still possible, and carried out every year. A young woman died of the procedure (in the U.K.) in December 1999. It is also entirely possible to prescribe injectable heroin to dependent users in the U.K. (by a Home Office license holder), and some family doctors prescribe enough amphetamines to patients to trigger a paranoid psychosis (no special license required; a patient recently murdered a family member under the influence of family-doctor prescribed amphetamine). But in nearly all countries it has not been possible to give any person LSD or even the shorter-acting psilocybin or DMT, for therapeutic purposes for several decades, although the research situation has recently eased slightly, with limited psychedelic drug research now being permitted by special government approval in Switzerland, Germany, Spain and the United States. This approval is difficult to obtain. The only psychedelic drug that can be used in medicine, without special approval, is ketamine.

In the normal course of events, treatment involving psychedelic drugs would have reached its proper level after the extravagant claims phase had passed, with an understood list of possible adverse effects, indica-





tions and contra-indications, cautions and precautions, advocates and opponents—as exist for all treatments. Even psychosurgery found a level within the system, despite gross abuse by some doctors in the 1950s, lasting consequences for the victims of these early procedures, and extremely negative public attitudes resulting from films such as *One Flew Over The Cuckoo's Nest*.

Psychedelic drugs, however, became caught up in an intense ideological battle, and the outcome of this battle was that not only did all therapeutic use come to an abrupt halt after 20 years, but almost all research was also suppressed. This work did not stop because some serious new side-effect came to light, or because there was absolutely no evidence of efficacy, although early claims of a miracle cure were of course exaggerated, as happens with other treatments. The total ban on psychedelic drug research was based on issues that were largely ideological. Ketamine provides an interesting example of the processes involved. The drug has been given to millions of patients worldwide. There are many reviews by doctors attesting to its safety and value over 30 years. In most countries, it is not even a controlled drug at the present time, although it is now a Schedule III drug in the United States. Nevertheless, if a research proposal is made involving 10% of the normal anesthetic dose, to be given to healthy informed volunteers, and the word "psychedelic" or even "hallucinogen" appears anywhere in the proposal, there is immediate and grave concern amongst some ethical committees where anesthetic trials often proceed without difficulty. It is hard to explain this anomaly in terms of scientific and health concerns alone. Such anomalies have led to suggestions that our historical era has a taboo against having certain aspects of the mind revealed.[611] Ketamine may provide an example of this taboo: a relatively safe medicine that is suddenly seen as unsafe because it is described as a "psychedelic drug" rather than a "dissociative anesthetic," even though it is given to psychiatric patients when bearing the anesthetic label. For example, the drug is used as an anesthetic for electroshock treatment.[486]

There were certainly defects in some of the psychedelic drug studies of the past, although these were rarely so grave as to justify the extreme reaction. Some of the positive results were placebo effects, others were due to spontaneous recovery that would have occurred anyway, to therapist devotion, to bias, to a lack of controls, and to a lack of follow-up: much the same problems as are seen with many new treatments, and much the same problems as bedevil other types of psychiatric research. With respect to using LSD as a therapeutic aid in alcohol dependence, for example, some results were positive but others were discouraging.[3, 193] Alcohol dependence can be an episodic illness. People tend to seek treatment when they are at the bottom of the cycle and can only either go up or proceed towards death. As a result, many treatments appear to produce short-term positive results.

In countries where there is a separation of church from state, there is an understandable reluctance to use research funds to support religious conversions. Underground LSD chemist Augustus Owsley once remarked that "psychedelic chemistry is applied theology."[301] Those committed to the Newtonian-Cartesian-Dawkins vision do not wish to support research that declares this world to be an illusion, and argue that starting your own religion (as recommended by Leary in *The Politics of Ecstasy*) does not help people who hear voices telling them to kill themselves or others, or those with Alzheimer's disease for example. Most governments have little enthusiasm for studies that tell them that all boundaries are an illusion and we are all manifestations of the Brahma energy. Some became wary of psychedelic drug research because investigators who took the drugs themselves often "went native" and became more spiritual and less scientific in their approach.[157] These investigators were seen as being even more inclined to present psychedelic drugs as a universal panacea than others with a new treatment.

These drugs were not, of course, a universal panacea. The example of psychiatrist R.D. Laing comes to mind, a friend of Leary's based in London. Laing not only underwent a 5-times-per-week training analysis, for 4 years, to become a Tavistock-trained psychoanalyst, but he





also later took many doses of LSD, sometimes together with his patients. Nevertheless, the insights he may have gained from these analytical and psychedelic experiences were not enough to prevent his life from coming to a relatively early close, clouded by alcohol dependence and depression. Shortly before Laing died, his alcohol problem and the aggressive behavior linked with it reached the point where patients complained, he was arrested several times by the police, and he voluntarily gave up his registration as a medical practitioner because he was facing investigations of both his professional conduct and his fitness to practise.[346]

Nevertheless, it can still be argued that researchers should have some personal experience of the altered states of being they are dealing with. The lawsuits relating to LSD therapy in the 1960s seem to have arisen largely out of the administration of LSD in the white coat/white hospital or army setting, often without informed consent, by doctors who appeared to have little empathy for the condition of their subjects, no real understanding of the psychedelic experience, and misplaced antagonism towards the concept of set and setting.[305] As Leary observed, "If you take acid in a looney bin, you'll have a looney bin trip." In England, it is usually the authorities that are in the dock over LSD treatment in the 1960s, rather than "psychedelic psychoanalysts" such as Laing. The accounts given by patients suggest that the hospital doctors against whom their complaints are laid had probably not bothered to read Leary's contribution to *LSD: The Consciousness Expanding Drug*, which describes the meaning and importance of the terms "set and setting."[350] The accounts given by some former patients make horrifying reading, but they are not so much an indictment of psychedelic therapy as of the persons who administered the drug to them, and the failure of those doctors to fully inform themselves about what they were doing.

Many anesthetists still do not carry out even the most elementary psychological preparation of their patients before giving them ketamine. It seems likely that there will eventually be some lawsuits involving failure to fully inform the patient (or their parents where the patient is

a child) as to the true nature and effects of the anesthetic they were given.

To resolve these dilemmas, it may be wise for psychedelic drug studies to include two types of investigators: those who have undergone part or all of the procedure themselves, in an ethically-approved manner, and those who have given a clear undertaking not to do so, working together. Otherwise a proper empathy with the participants may be impossible to achieve.

Until 1998, the outlook was relatively favorable for approved research into the nature of mind and brain using ketamine. However, events in the social, political, and ideological arena were already moving to close this promising avenue, just as they had done with LSD, as it became more widely known that ketamine is a mind-revealing drug as well as an anesthetic. There are 30 years of medical studies confirming the relative safety of ketamine in controlled settings, even in "office surgery," but times change.[161, 605] 1998 ended with articles in *The Boston Globe* in which prominent persons attacked the sober work of John Krystal and the Yale University team as "unethical."[320–1] Doctors who were administering far larger quantities of ketamine for medical reasons noted the absurdity of the situation. The growing restrictions on ketamine drew this response from some doctors working in the emergency field:

> The safe and effective use of ketamine for sedation/analgesia by emergency physicians has been validated in the medical literature. Nonetheless, arbitrary restrictions of this medication to anesthesia practitioners have prohibited emergency physician use in some locations. We explore the scientific evidence related to the use of ketamine by emergency physicians for sedation/analgesia, the history of sedation, the operational definitions of conscious sedation and dissociative anesthesia, and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) related standards. We conclude that ketamine sedation/analgesia offers many specific advantages for emergency patients and that emergency physicians in the appropriately monitored setting safely administer it.[559]
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> **Richard M. Sobel, Barry W. Morgan** & **Michael Murphy**
> "Ketamine in the ED: medical politics versus patient care."
> *American Journal of Emergency Medicine* (1999)





## Afterword

It seems likely that controls on ketamine will increase, and that the number of compulsive users will also increase. The history of ketamine is about to enter its most eventful phase to date. What happens next will be discussed in my forthcoming book, *Ketamine Reconsidered*. Communications concerning the contents of *Ketamine: Dreams and Realities*, or contributions to *Ketamine Reconsidered,* are welcomed. Contact can be made via e-mail to: K@BTInternet.com.

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Abstracts of some medical references can be obtained on the web. Go to www.bmj.com, click on "medline," and click on "National Library of Medicine." Search engines will produce a complete copy of an increasingly large number of papers.


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# Index

**D**



**E**

**K**

**L**



**M**









**N**

**O**



**P**

**X**



**Y**



**Z**







## Sub-Heading Index

## Biographical Note

London researcher Karl L. R. Jansen, M.D., Ph.D., and Member of the Royal College of Psychiatrists, is the world's leading expert on ketamine. He has studied ketamine at every level: from photographing the receptors to which ketamine binds in the human brain, while earning his doctorate in clinical pharmacology at the University of Oxford, to publishing papers on his discovery of the similarities between ketamine's psychoactive effects and the near-death experience during his study of medicine in New Zealand. Dr. Jansen believes that ketamine can have potent healing powers when used as an adjunct to psychotherapy but warns of the addictive nature of ketamine. Because of this risk, he has developed new methods for the treatment of ketamine addiction. Dr. Jansen left Oxford in 1993 to train in psychiatry at the Maudsley and Bethlem Royal Hospitals. He is currently employed by the new South London and Maudsley NHS Trust.

## About the Publisher: The Multidisciplinary Association for Psychedelic Studies (MAPS)

**The Multidisciplinary Association for Psychedelic Studies (MAPS)** is a membership-based non-profit research and educational organization. We assist scientists to design, fund, obtain approval for and report on studies into the risks and benefits of MDMA (ecstasy), psychedelic drugs and marijuana. MAPS functions as a non-profit pharmaceutical company, working to develop these substances into prescription drugs.

### Replacing Fear with Facts

Please join MAPS in supporting the expansion of scientific knowledge in this crucial field. In a political climate that supports scare tactics over scientific accuracy, we must investigate the risks and benefits of these substances on our own. Progress is possible with the support of individuals who care enough to take collective and individual action.

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**Sponsored Dr. Evgeny Krupitsky's pioneering research** into the use of ketamine-assisted psychotherapy in the treatment of alcoholism and heroin addiction.

**Sponsored the first FDA-approved study** of MDMA-assisted psychotherapy. The study, under the direction of Dr. Michael Mithoefer, investigates MDMA as a treatment for posttraumatic stress disorder (PTSD).

**Funded the world's first government approved** (Spain), scientific study of the therapeutic use of MDMA. The study, under the direction of Jose Carlos Bouso, Ph.D. candidate, investigated women survivors of sexual abuse with PTSD.

**Initiated the protocol design** and regulatory approval process for a proposed study of MDMA-assisted psychotherapy for anxiety in advanced-stage cancer patients, hopefully to take place at Harvard Medical School under the direction of Dr. John Halpern.

**Funded the collection** of preliminary data for a study of MDMA's effects on memory and other neurological functioning, conducted by Dr. John Halpern. This data later paved the way for a $1.8 million, five-year grant to expand the study from the National Institute on Drug Abuse (NIDA) to Dr. Halpern.

**Assisted Dr. Charles Grob** to obtain permission for the first FDA-approved human safety study with MDMA after it was criminalized in 1985.

**Sponsored the first study** to analyze the purity and potency of street samples of "Ecstasy" and medical marijuana.

**Funded the initial collection** of analytical data on marijuana vaporizers, data which Dr. Donald Abrams used to obtain approval from the FDA for the world's first study on vaporized marijuana in human subjects.

**Coordinated and funded** the successful effort of Dr. Donald Abrams to obtain permission for the first human study into the therapeutic use of marijuana in 15 years, in subjects who were HIV+, and to secure a $1 million grant from the National Institute on Drug Abuse.

**Obtained orphan-drug designation** from the FDA for smoked marijuana in the treatment of AIDS Wasting Syndrome.

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