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Drugs effect

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Rochester Institute of Technology

A Thesis submitted to the Faculty of the College
of Imaging Arts and Sciences in candidacy for the
degree of Master of Fine Arts.

Drugs Effect

by

Daisy Fang
September 1997

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Signature

Sep 10. 97.

Date

*Dedicated to
my dearest daddy*

Paul Fang, Chan-Hsuing

He is the best gift that will ever happen to me.

In the Special Memory of

The Opium Wars in China

(1836 - 1898)

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Drugs Effect

This thesis project is a 3 minutes 30 seconds computer generated animation that includes 2D graphics design, 2D animation, 3D modeling and animation. In addition, an optional interactive multimedia project serves as the introduction to this animation.

I chose this subject because I think computer graphics is a tool that enables the impossible to become possible. The illusory effects of drug abuse by the user can be portrayed by means of computer graphics.

The main focus of this thesis project is to try to make my audience (youth) understand that drugs abuse is the point of no return. One becomes the puppet controlled only by drugs. The inevitable illusion of drugs is like a sweet dream in a bubble; it might be beautiful and fantastic, but it is not true and can be easily broken.



Fictional Inspirations

The initial inspiration was from the films *Trainspotting*, *Lost Highway* and *Kama Sutra*.

Trainspotting

Trainspotting is a movie directed by Danny Boyle, based on the novel by Irvine Welsh and the screenplay by John Hodge. *Trainspotting* is about a group of friends/junkies living the dark life on the underside of Edinburgh. The story tracks them through their days and nights as they free-fall toward self destruction. Heroin changes everything.

Lost Highway

Lost Highway is another really weird movie from the really weird David Lynch. According to the production notes, the film "expands the horizons of the medium, taking its audience on a journey through the unknown and the unknowable." Sounds like a night of prolonged substance abuse to us.

Kama Sutra

Kama Sutra is directed by Mira Nair. In the world according to the director there is really nothing very different between life now and life in a 16th century Indian palace, the setting for her fourth feature. As two young woman - (one a princess and one a slave) duke it out over men, it all comes down to sex and love and sex and betrayal and sex and power.

*See "Research" for more details of the movies.

Historical Inspirations

By 1836, 8 millions lbs of Opium were illegally smuggled into China. Opium had become the British economic panacea. In the opposite, China had become the largest worst drug case in Human History. In 1838, nine out of ten people in Kwangtung and Fukien provinces were addicts. China had become the "**Sickman of the East.**"

After losing the two infamous Opium Wars, Hong Kong Island, Kowloon and the New Territories were ceded to Great Britain, the Ching dynasty was overthrown. China started to disintegrate. Close on the heels of the British came the French, American, Russian, German, other European countries and then came the Japanese.

Foreign powers introduced a whole century of humiliation and many other humiliating unequal treaties onto China. China had

become a semi-colonial country. China was not freed from this Unequal Treaty System and the addictive Opium drug until 1943. Hong Kong has now been a British colony for 156 years. The 99 years lease of the Hong Kong New territories will soon be due in **July 1st, 1997**.

*See "Research" for more details of the Opium War.

Societal Inspirations

Drugs have always been a part of the American culture, just as they have been in virtually every society throughout history. Much has been said and done to decrease drug use, yet America's intractable drug problem continues to affect all levels of society, from the high echelons of the government to the inner cities. Although the government allocates billions of dollars every year to decrease drug use and stop drug trafficking, addiction and violent crime associated with the drug culture pervade American society.

Drug-related episodes rose by 65 percent (from 323,100 to 531,800) from 1978 to 1995, while overall emergency department visits increased by 24 percent (from 71.3 million to 88.1 million). The proportion of drug-related emergency department visits was between 0.5 and 0.6 percent during that period. The number of drug-related episodes remained stable between 1994 (518,500) and 1995 (531,800).

The number of **illegal drug deaths** in the US in a typical year is as follows:

Cocaine kills about 2,200.

Heroin kills about 2,000.

Marijuana kills 0. There has never been a recorded death due to marijuana at any time in US history.

All illegal drugs combined kill about 4,500 people per year, or about one percent of the number killed by alcohol and tobacco. Tobacco kills more people each year than all of the people killed by all of the illegal drugs in the last century.

*See "Research" and "Appendix" for more details of Drugs Abuse and Societal Sources.

Fictional Sources

Trainspotting

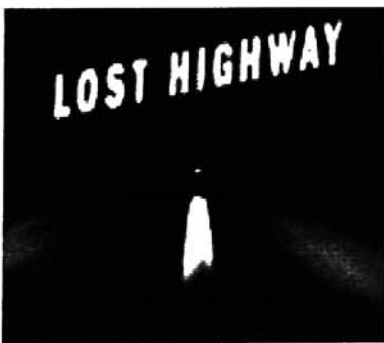


Trainspotting is a movie about drugs, depravity, and all-around bad behavior. It's about characters who are tossing away their lives for the sheer reckless hell of it. Broke, unemployed, beyond hope or even apathy, they fill the void any way they can- by stealing, getting sloshed in clubs, watching home porn videos, and, mostly, by shooting heroin, a drug they embrace for its luscious zombie highs, with nary a care for its perils.

Adapted from Irvine Welsh's hugely popular 1993 cult novel, *Trainspotting* is already a smash hit in Britain, where a generation of viewers have embraced it as a latter-day *A Clockwork Orange*. Like that movie, or *Sid and Nancy* (or *Pulp Fiction*), it offers transgressive kicks served up without apology or judgement the spectacle of unregenerate thrill junkies high on self-destructive bravado.

In *Trainspotting*, director Danny Boyle works in a feverdream style derived, in equal measure, from the street operas of Martin Scorsese and the adrenaline aesthetic of music videos. He invites us to share at the world through jittery, sensation-starved eyes. The movie will doubtlessly be accused of glorifying heroin, and, in a sense, it's guilty as charged: It's a brutally honest depiction of the *fun* of drugs. Yet we are also presented with a hero who knows, on some level, that he is in free fall, trashing his life.

Lost Highway



Lost Highway is very psychologically invasive and compelling. David Lynch's ability is to pull you into a dreamlike world based in some skewed reality. It is filled with scenes where you are unsure exactly what you are looking at - and you are not sure you really want to see it any more clearly than that.

Lynch mostly accomplishes this without using specifically shocking moments. Rather, he uses a growing sense of dread and unease about what you might see, punctuated by a soundtrack that seems to be the noise inside the character's head: pounding, grinding, throbbing sounds that peak and disappear.

It is all done with a control that is reminiscent of the better episodes of *Twin Peak* or his first film *Eraserhead*. Lynch hints, suggests, alludes to what it is he is getting at, but leaves explanation to the imagination, where it becomes that much more frightening.

Kama Sutra



Kama Sutra is an epic love tale, told from a woman's perspective, drowns the viewer in such richly sensual imagery that viewers may feel they have been drugged with beauty.

Mira Nair takes us back to the 16th century, when India was still a feudal culture, hedonism was embraced, and colonialism hadn't lowered its curtain of sexual repression and body shame.

A male director, in most cases, wouldn't celebrate male beauty the way Nair does in introducing Tikaram, wet and long-haired and caught in profile in a golden sunset.

Cinematographer Declan Quinn (*Leaving Las Vegas*), the brother of Aidan Quinn, celebrates endless varieties of color and light in *Kama Sutra* favoring ochers, hot colds and crimsons and gives us a precolonial India that looks, appropriately, like a lush storybook dream. Even the elephants are gorgeous.

A Short History of the Opium War in China (1836 1898)

In early 18th century, foreign traders came to China to purchase tea, silk, rhubarb, and other articles. But they paid in gold and silver, the Chinese found little need for the industrial products of the West. The British East India Company's shipments to China were 90 % of gold, and only 10 percent commodities. Slowly the balance began to slip the other way - by Opium.

In 1773, the British illegally smuggled 70,000 kg of Opium through its East Indian Company. Since then the number of Chinese addicts grew exponentially. Other foreign countries, e.g. American and French traders followed immediately to grab their share of fortune.

By 1836, 8 million lbs of Opium were illegally smuggled into China. In that same year, British sold 18 million worth of Opium in China as against the 17 million worth of Chinese tea and silk which they bought. **Opium had become the British economic panacea. In the opposite, China had become the largest worst drug case in Human History.** In 1838, 9 out of 10 people in Kwangtung and Fukien provinces were addicts.

As a result, both the Chinese central and local government officials were completely corrupted by this addictive drug. The drug traffic caused a disastrous outflow of wealth. Alarmed at the rapid drain of gold and silver, the Emperor appointed Lin Tse-Hsu to be the imperial commissioner charging him with suppression of the Opium traffic.

Twice Lin wrote to Queen Victoria to seek her intercession. In his first letter, Lin urged the Queen to stop poppy cultivation and manufacture. In his second well known letter, he stated in part:

*The wealth of China is used to profit the barbarians... By what right do they in return use the poisonous drug to injure the Chinese people?... Let me ask, **where is their conscience?** I have heard that the smoking of Opium is very strictly forbidden by your country... Why do you let it be passed on to the harm of other countries? Suppose there were people from another country who carried Opium for sale to England and seduced your people into buying and smoking it; certainly your honorable ruler would deeply hate it and be bitterly aroused... Naturally you would not wish to give unto others what you yourself do not want... May you, O Queen, check your wicked and sift your vicious people before they came to China, in order to guarantee*

the peace of your nation, to show further the sincerity of your politeness and submissiveness.

On March 18, 1839 Lin ordered all foreign Opium traders, Jardine, Innes, Dent, and others to surrender their Opium. He also severely punished corrupt Chinese officers who connived with the smugglers. In response, British sent its expeditionary warships and took control of Hong Kong in 1841 following the infamous **First Opium War**. Defeated by the British, China was forced to accept the humiliating **Treaty of Nanking** in 1842. China had to pay a huge **indemnity : 21 million taels of silver, Hong Kong was ceded to the British in perpetuity etc.** The most ironic point was that **Opium, the immediate cause of the war, was not even mentioned.** The Opium traffic got much worse than before.

The phenomenally huge trade profit soon tempted the British and French to seek an excuse to renew their hostilities in order to extend their trades in China. In October 1856, some Chinese officials boarded a British-registered ship but owned by a Chinese resident in Hong Kong, the Arrow, charged its crew with smuggling and lowered the British flag which became the British's excuse for another war. The French, using the murder of a French missionary in the interior of China as their excuse, joined the British military operations the infamous **Second Opium War**, also known as **The Arrow War**. Defeated again by the British and French, China was forced to accept the humiliating **Treaties of Tientsin** and had to pay 6 million taels of silver indemnity etc. In further negotiation in Shanghai, **the importation of Opium was even legalized.** The Chinese, however, refused to ratify the treaties, and the allies resumed their hostilities, captured Peking (or Beijing). Immediately, **British and French looted all the precious Chinese national treasures, ancient artifacts they could find in the Beijing city and then burned the famous Summer Palace.** In 1860, China was forced to sign the **Peking Convention**, in which China was forced to observe the Treaties of Tientsin. China also had to pay an increased **indemnity - 16 million taels of silver and Kowloon and Stonecutters Island were ceded to British etc.** Foreign countries had now gained unrestricted right to legally import the Opium drug to China. China had become the **"Sickman of the East"**.

In 1898, British obtained the Hong Kong - New Territories under a 99-year lease.

Illegal Drugs

Amphetamines

Like cocaine, can produce an intense rush, a feeling of well-being and excitement that is likened to an orgasm. One variation, the methamphetamines, is so potent that it is known as speed. Speed has a dark reputation because it can produce paranoia and violent behavior. The long history of abuse of amphetamines had led to the rise of non-amphetamine stimulants less potent and more tightly controlled. As a result amphetamine use has decreased significantly. Note: Long term users will often use depressants to lessen the stimulant effect.

Street Name:

Amphetamines:

Uppers; Pep Pills; Wake-ups; Bennies; Dexies; Truck Drivers; Co-pilots; Sky Rockets; Bombs.

Methamphetamines:

Meth; Crystal; Crank; Speed.

Overdose:

High fever; convulsions; coma; cerebral hemorrhage; death.

Cocaine

Cocaine is one of the most powerfully addictive drugs of abuse. Most clinicians estimate that approximately 10 percent of people who begin to use the drug "recreationally" will go on to serious, heavy use. Once having tried cocaine, an individual cannot predict or control the extent to which he or she will continue to use the drug.

Street Name:

Coke, Snow, Toot, Flake, Lady, White, Nose Candy, Happy Dust. Crack and Rock are used interchangeably.

Overdose:

Delirium; rapid, irregular, shallow respiration; convulsions; unconsciousness; death.

Designer Drugs

A designer drug is an analog, a chemical compound that is similar in structure and effect to another drug of abuse but differs slightly in structure. Designer drugs are produced in clandestine laboratories to mimic the psychoactive effects of controlled

drugs. Theoretically, the number of potential synthetic analogs that can be made and distributed is very large.

The most commonly known types of synthetic analog drugs available through the illicit drug market include analogs of fentanyl and meperidine (both synthetic opioids), phencyclidine (PCP), and amphetamine and methamphetamine (which have hallucinogenic and stimulant properties). The street names of designer drugs vary according to time, place, and manufacturer, and they change frequently.

Street Name:

Heroin: Horse, smack, Brown Sugar, China White, Junk, Stuff and Shit.

Morphine: Miss Emma, Unkie, Morph.

Codeine: Schoolboy.

Dilaudid: Doctors, Lords.

Opium: Dreamer, Poppy.

Methadone: Meth, Dollies, Methadose.

Overdose:

Pinpoint pupils; cold and clammy skin; low blood pressure; slow and irregular heart rate; low body temperature; deep sleep; stupor; coma; death.

Marijuana

Marijuana and hashish are different versions of the same drug -- they're made from the same plant. Marijuana is far more powerful today than in its heyday in the 1960s because it now comes with a higher percentage of its active component, THC (tetrahydrocannabinol). Hashish and hashish oil have even higher concentrations. In everyday use, marijuana may produce symptoms closer to those of alcohol than those of the other hallucinogens. Several long-term health risks from regular use of marijuana are suspected, including lung cancer from the high concentration of tar in a single joint, equivalent to 10 to 20 cigarettes. As with tobacco, these health problems are unlikely to be seen in youth.

Street Name:

Pot; Grass; Bhang; Dope; Ganja; Hemp; Weed; Joints; Jays; Sticks; Doobies; Acapulco Gold, Panama Red, Maui Wowie, Mauna Loa, Mexican.

Long-Term Use:

"Amotivational syndrome": diminished drive, lessened ambition, apathy, shortened attention span; poor judgment; impaired communication skills; impaired memory and concentration; bronchitis; asthma; sore throat.

Overdose:

None.

PCP (Phencyclidine)

Phencyclidine commonly referred to as PCP, was developed in 1959 as an anesthetic and was later used in veterinary medicine as a powerful tranquilizer. Use of PCP in humans was discontinued in 1965, because it was found that patients often became agitated, delusional, and irrational while recovering from its anesthetic effects. It is classified as a Schedule III drug under the Controlled Substances Act. PCP is illegally manufactured in clandestine laboratories and is sold on the street by such names as angel dust, crystal supergrass, killer joints, ozone, wack, and rocket fuel. The variety of street names for PCP reflects its bizarre and volatile effects.

PCP is a white crystalline powder that is readily soluble in water or alcohol. It has a distinctive bitter chemical taste. PCP can be mixed easily with dyes and turns up on the illicit drug market in a variety of tablets, capsules, and colored powders. It is normally used in one of three ways: snorted, smoked, or eaten. For smoking, PCP is often applied to a leafy material such as mint, parsley, oregano, or marijuana.

Street Name:

Angel Dust; Hog; Pig; Horse; or Elephant tranquilizer. When mixed with marijuana: Superweed; Killer Weed; Crystal Joints.

Overdose:

Coma; convulsions; death.

Percent of Annual Drug Use by Junior and Senior High Students

		87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96
Marijuana	Jr. High	5.7	7.6	6.6	4.5	4.8	5.8	8.2	9.5	13.6
	Sr. High	20.1	21.9	19.1	16.9	16.4	19.0	24.6	28.2	34.0
Cocaine	Jr. High	1.2	1.7	1.7	1.3	1.5	1.6	1.9	1.9	2.7
	Sr. High	3.9	4.6	4.0	3.4	3.3	3.4	4.0	4.5	5.6
Uppers	Jr. High	2.4	3.6	3.6	2.6	3.0	3.0	3.4	3.3	4.6
	Sr. High	7.3	9.2	8.0	7.6	8.3	7.9	9.1	9.3	10.5
Downers	Jr. High	1.7	2.5	2.5	1.9	2.2	2.2	2.4	2.4	3.5
	Sr. High	4.2	5.3	4.7	4.6	4.9	4.6	5.3	5.5	7.1
Inhalants	Jr. High	3.9	5.2	4.9	4.0	4.8	4.8	5.9	6.3	8.5
	Sr. High	4.4	5.1	5.1	4.9	5.5	5.6	6.9	7.5	7.6
Hallucinogens	Jr. High	1.1	1.7	1.8	1.5	1.8	1.9	2.1	2.4	3.3
	Sr. High	3.1	4.4	4.9	4.9	5.3	5.7	6.6	7.7	9.5

Overview

Story of Animation

Part I

This part is about the peace and happiness of youth (from baby to teenager) before they have been controlled by drugs. (45 sec.)

Part II

This is the fantastic illusion part due to the use of illegal drugs. The main character transforms from a child into a wooden puppet. (1 mins 15 sec.)

Part III

This part is talking about the negative side of drug abuse. The depressed wooden puppet finally shatters into pieces... (1 mins 08 sec.)

Credits

(22 sec.)

Symbolic Meaning

Puppet

As consequence of drug abuse, one will lose all sense and self control and become dependent to the drugs.

Bubble

Everything you see in a bubble is a mere illusion. It might be beautiful and fantastic, but it is not true and can be easily broken.

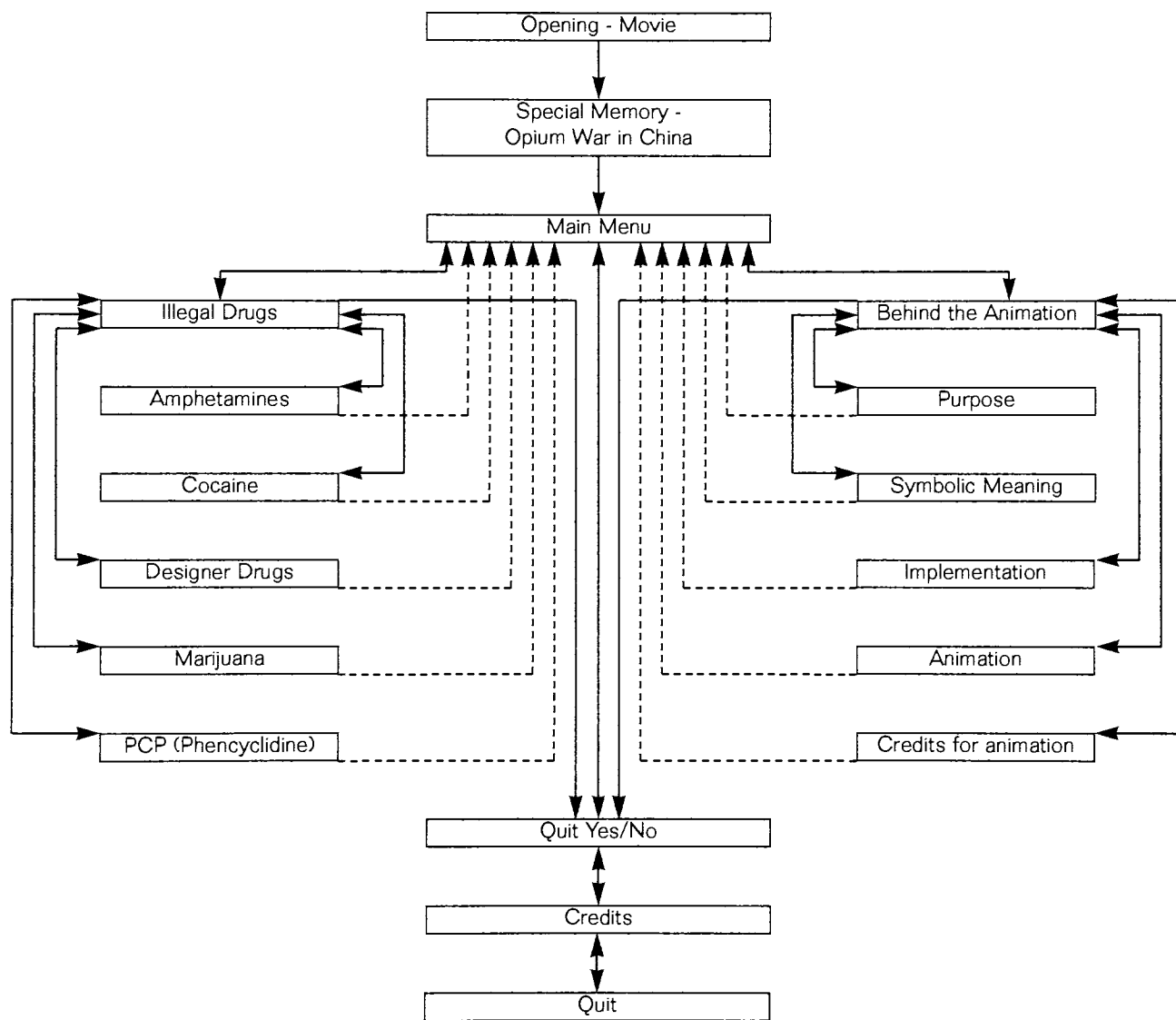
Interactive Multimedia

As a method to help the audience understand the ideology of the objects and images expressed in animation, I created an interactive multimedia project to explain the symbolic meaning.

In doing so, I want to make the interactive multimedia project into a digital thesis paper. For that reason, I think creating an interactive multimedia project will better serve the user than a formal written presentation of research. Also, I can easily add my thesis into my personal digital portfolio.

Navigation Map

Interactive Multimedia



Schedule	2D/3D Animation (30 fps 3 mins 30 secs)	
	Interactive Multimedia Introduction	
	Research	Nov 96 Mar 97
	Story Board Development (Main Concept)	Jan 97
	2D Graphics / Models Production	Dec 96 Apr 97
	3D Models / Animation Rendering	Jan 97 - Apr 97
	Final Collaboration of Thesis work	Mar 97 - Apr 97
	Complete / Output to Video Presentation	May 97
	Interactive Multimedia Introduction	Apr 97 May 97
	Thesis Paper	May 97

Technical Reference

Hardware Systems

Silicon Graphics Impact 10000
 PowerMac 7500/100
 PowerMac 8500/180
 29" TV Monitor
 VCR

Software Applications

2D Graphics / Textures

Adobe Illustrator	6.0
Adobe Photoshop	4.0
Fractal Design Painter	4.0
Live Picture	2.5
Macromedia Freehand	5.0.1
Specular TextureScape	2.0

2D Animation

Adobe After Effects	3.0
Adobe Premiere	4.2
Avid VideoShop	3.0.1
ElectricImage Animation	2.5
Gryphon Morph	2.0
Macromedia Director	5.0.1
Strata MediaPaint	1.1.2

3D Modeling / 3D Animation

Alias Wavefront Alias Power Animator	7.5
Adobe Dimensions	2.0
Bentley MicroStation	5.0
Fractal Design Poser	1.0
Macromedia Extreme3D	2.5
Macromedia MacroModel	1.5
MetaTools Bryce	2.0
Ray Dream Designer	3.1.1
Shade	3
Specular Infini-D	3.0
Specular LogoMotion	2.0.1
Strata StudioPro Blitz	1.75+
Strata Type3D	2.5

Audio

Macromedia SoundEdit16	2.0
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Combination

Adobe After Effects	3.0
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Input/Output from/to Video

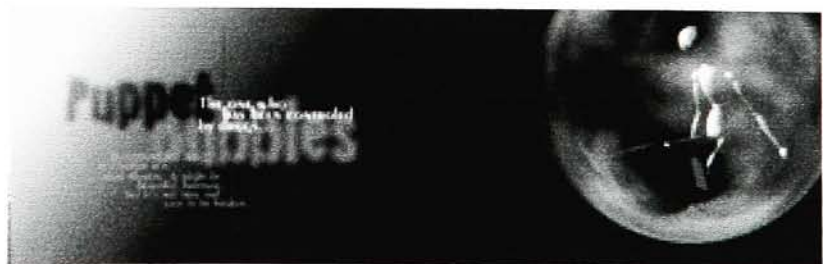
Adobe Premiere	4.2
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Interactive Multimedia Introduction

Adobe After Effects	3.0
Adobe Photoshop	4.0
Macromedia Director	5.0.1

Thesis Presentation

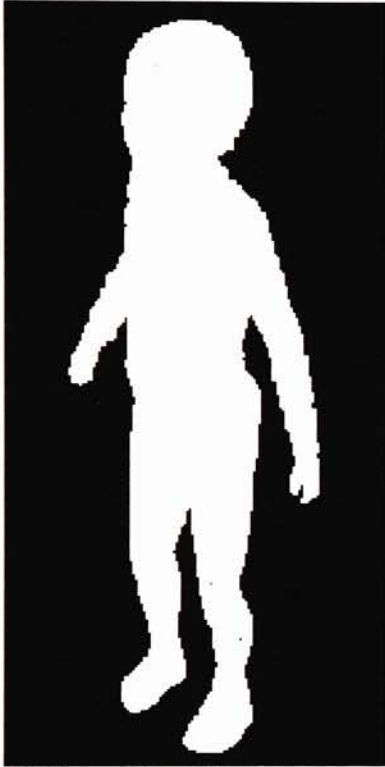
For the thesis show presentation, I used the VCR to present the final animation on a 29" TV monitor in conjunction with a PowerMac 7500/100 to play the interactive multimedia introduction. A poster design with an explanation of my thesis project complements the presentation.



Poster Design.

Procedure

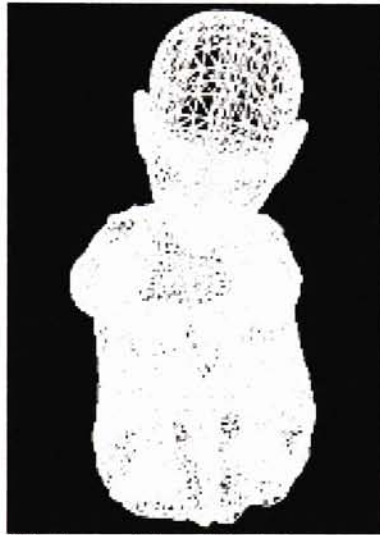
3D Model Establishment



Wireframe of the kid.

I used the *Fractal Design Poser 2.0* as the primary software for the development of the character animation.

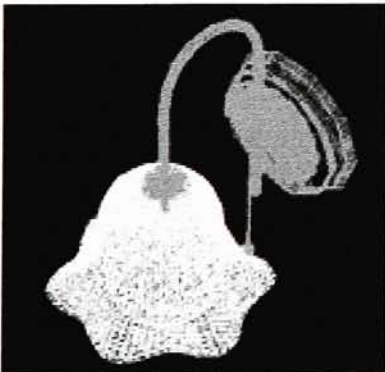
Poser is a surface/nurb modeler and animator. It is a very easy to use software yet it allows sophisticated character animation.



Wireframe of the sitting baby.



Wireframe of the standing baby.



Wireframe of the Lamp.

After I had finished the procedure with *Poser*, I exported the models as DXF format and imported them into the other softwares, such as *Alias/Wavefront Alias Power Animator 7.5*, *ElectricImage Animation 2.5*, *Macromedia Extreme3D 1.0* and *Strata StudioPro Blitz 1.75+*.

Alias can read/write/execute both polygon and surface/nurb format, likewise for *ElectricImage*. *ElectricImage* is a very powerful animation software for Macintosh. It is ideal for animation but not the modeling. *Extreme3D* is good at profile animation. *Strata3D* is a polygon modeler and doesn't support surface/nurb format. However, it offers good material and lighting setting.

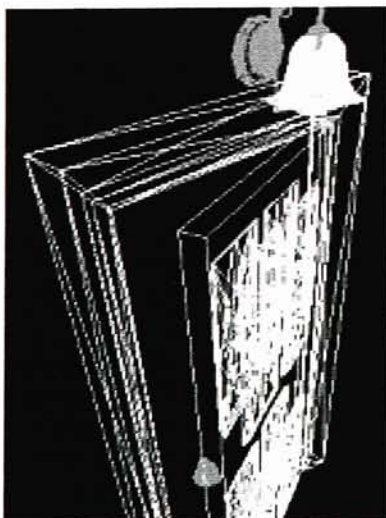
I used *Photoshop* and *TextureScape* to create most of the textures for my models and imported them into the 3D softwares. With the *Alias*, *ElectricImage*, *Extreme3D* and *Strata3D*, I can easily adjust the material, texture mapping, lighting and camera motion; moreover, the rendering is a lot faster than *Poser*.



Wireframe of the Syringe.

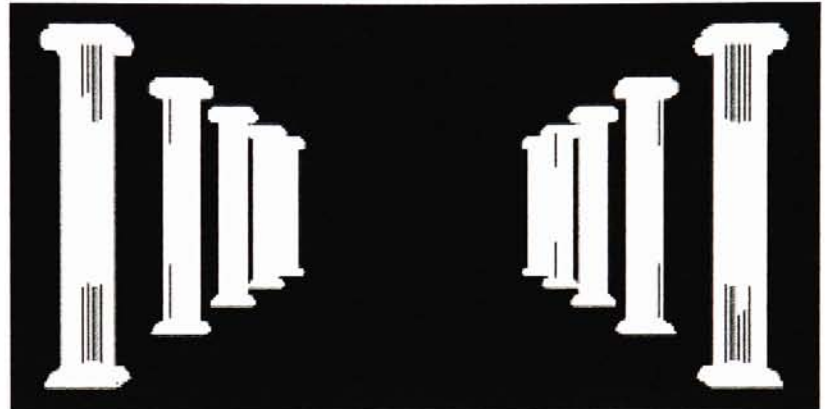


Wireframe of the Chair.



Wireframe of the Door and Lamp.

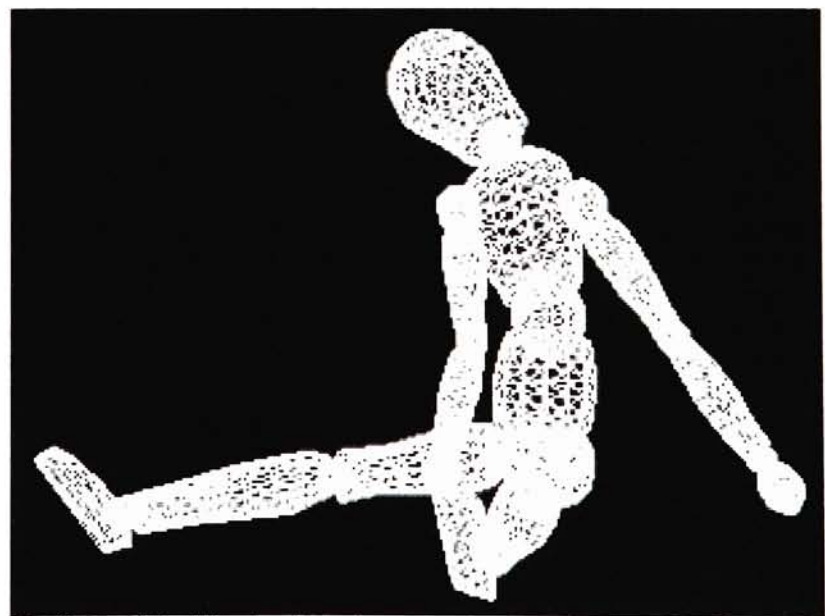
I used *Poser* to create my puppet and imported the DXF file into *Strata3D*. The rest of the models and animation in Part I were mainly constructed using *Strata3D*.



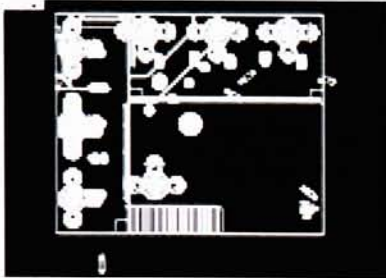
Wireframe of the Ionics Column.

At the end of Part I is the link between Part I and Part II. After the injection, the main character turns into a puppet and steps into the world of drugs.

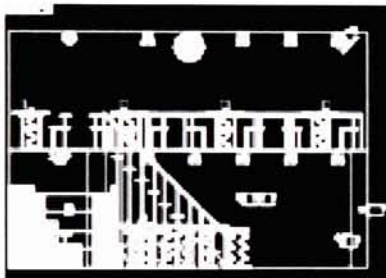
The door symbolises the entrance to the world of drugs. Inside the door sits a depressed puppet. The wooden puppet is the main character in my animation, it symbolises a person who has been effected and controlled by the use of drugs.



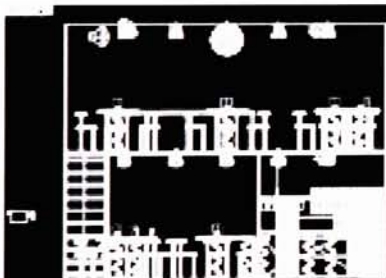
Wireframe of the Wooden Puppet.



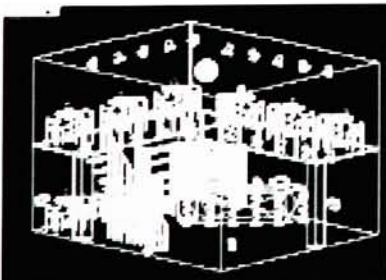
Top View.



Front View.



Right View.



Custom View.

I used the *Bentley MicroStation 5.0* to create all the 3D models of a pub. *MicroStation* is a good software for creating 3D models in Macintosh, but not good at material and lighting setting. Therefore, I exported all the files as a DXF format into *Strata3D* to set the material and lighting with *Strata3D*.

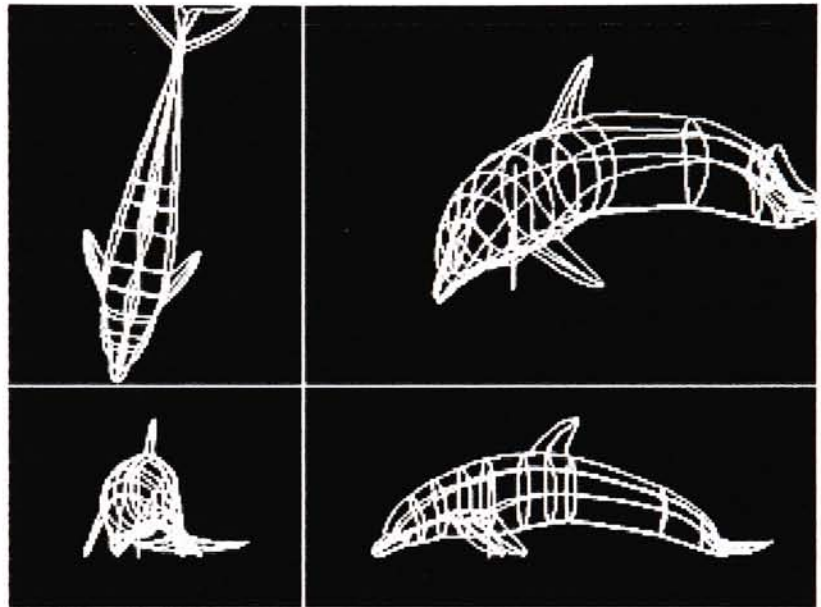


Pub Interior Design.

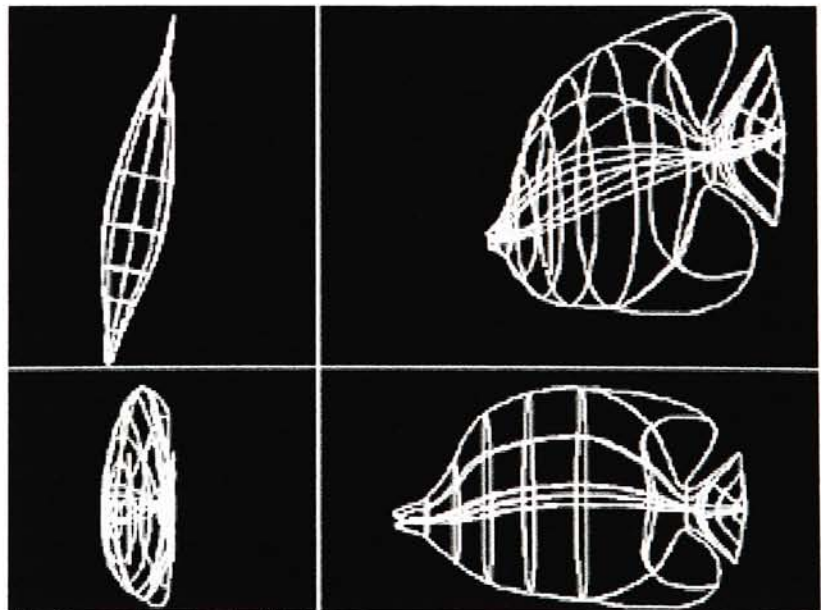


Pub Interior Design.

Shade 3 is a surface/nurb modeler. I used *Shade* to create the models of the Dolphin and the Tropical Fish. Once I had finished the modeling, I exported the models into *Alias* and *Strata3D* to create their motion and material setting.



Wireframe of dolphin.



Wireframe of the tropical fish.

Movie Organization

I chose to use *Adobe After Effects 3.0* to be my compilation platform. After I had finished all the rendering from a great variety of different softwares, I combined all my footages and movie clips with *After Effects*.

In my opinion, *After Effects* is a very powerful software for post-production, even better than *Alias/Wavefront Composer*. It can import *Photoshop* layer, *Illustrator* file, PICT sequence, audio, movie. *After Effects* can also change the geometric data of every footage, such as transformation and time remapping.

Part I

I used *Adobe Photoshop 4.0 Filter - Render - Different Clouds* to create a clouded background, then I imported the cloud image into *After Effects* twice. In *After Effects*, I adjusted the scale of the under one of the cloud images to 62.5%. For the upper one, I used a setting of the geometric scale 64%, opacity 70% and changed the mode of the layer to *Different*, this gave me a water-like background.



Baby in a bubble and Lighting.



Baby flowing with the Bubble.

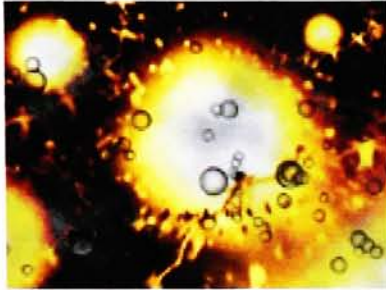
I used the *Keying - Color Key* to key out the background color of the Baby's movie clip. Next, I used the filter *FE Sphere (KPT Final Effects)* to create the largest bubble with the cloud image, so I could easily adjust the velocity and position of the bubble to match the Baby's motion. I also used the filter *FE Bubbles* to create a bubbles flowing environment. *FE Bubbles* is one of the functions of the *FE Particle System*. For the better result, the layer of the Bubbles has to be located under the *Different* mode Cloud layer.



Kids and the Utopia.

This is the peaceful world which children are jumping and playing happily in here. It is constructed by using primitive shapes such as a sphere or cylinder.

Most of the Children's motion were movie clips; I combined these movie clips with my background after I had finished keying out their backgrounds.



Kids and Fireball.

This is a Utopia-like world, no war, no hunger, everyone in this world is happy and friendly. I used the fireball to represent life; all nature seemed to be full of vitality and the children is calm and safe in here.

All the Fireballs were mere 2D images, I combined them with the Children's movie clip by using several mattes to create the 3D-like effect.

Part II

I used the *FE Sphere* function to create another large bubble. I adjusted the value of the scale and opacity of the Door image and added the footsteps sound effect to make it sound like somebody was walking toward the door.

I set the mode of the Door layer to *Screen*, this would keep the highlight of the Bubble still appeared on the Door and made my audience believe the Door was in the Bubble.



Door appears.

Inside the door is the world of drugs. For the same reason as the Door layer, I set the mode of the Depressed Puppet and the Firewipe movie clip to *Screen*. I used the *Keying Luma* key to key out the black background of the Firewipe.

I changed the *Mask Shape* of the Firewipe movie clip to *Oval* and set the *Mask Feather* to 30 pixels. This would keep the range of the Firewipe movie clip in the Bubble.

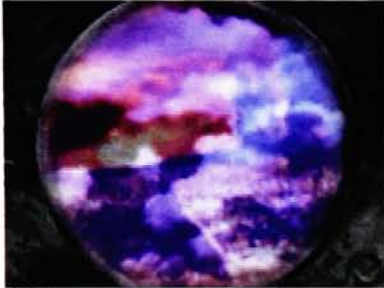


Puppet is burning by the Fire.

After the Puppet and Chair had been burned by the fire, the Syringe appeared and injected the drugs into the vein. For the reduction of the color of the Injection movie clip, I changed the mode of it to *Luminosity*. This would make the layer of the Injection use the same color mode as the layer which was under it. (My background was a grey scale mode.)



Injection.



Dolphin swimming in the sky.

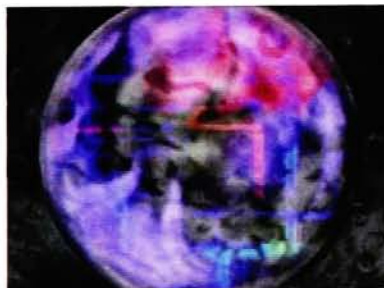
After the injection, the illusion started to appear. For the same reason as the Firewipe, I used the same setting of the *Mask Shape* and same value of the *Mask Feather* for the Moving Cloud movie clip. Meanwhile, I changed the mode of the Dolphin movie clip to *Softlight*, this could reduce part of the sharp color of the movie clip and also allowed the Moving Cloud to show behind it simultaneously. The environment is created by *MetaTools Bryce 2.0*.



Mermaid and fishes in the Ocean.

Because the background was still the Moving Cloud (blue and white,) I set the mode of the Mermaid movie clip to *Luminosity*, and changed the movie clip into a blue scale. *Mask Shape Oval* and *Mask Feather 30 pixels*.

Not all of the moving objects were fish, I used the *FE Particle System* to create some cubes to move behind the mermaid and tropical fish.



Compumatrix and Weavy mask.

I used a flowing purple water to be the background and set the mode of the Compumatrix movie clip to *Lighten*. This made the Compumatrix show only the part of which was lighter than its background. At the same time, I changed the mode of the Weavy Mask to *Silhouette* and opacity 60%. This made the white part of the Weavy Mask become transparent and the black part become translucent.



Kids flowing.

For creating the effect of the kids flowing into the sky and disappearing finally, I set the mode of kids flowing movie clip to *Overlay*. This would increase the contrast of the background color and showed the foreground color only the part which was lighter than the background.



Drugs name flowing.

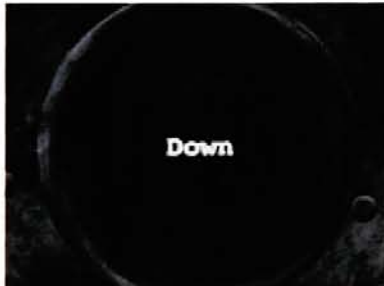
I created a blur circular matte with *Photoshop* and imported it into *After Effects*. I used this matte to be the *Track Matte* of all the Drugs Name. With the *Track Matte* setting, the moving of the Drugs Name won't be appear out of the matte; therefore, I can keep all the Drugs Name within the Bubble. By the way, *Track Matte* is invisible. (This is different with the *Mask Shape* setting. *Mask Shape* setting will follow the layer's motion and change the position, but *Track Matte* won't.)



Puppet Shatter.

Part III

After the camera seemed to zoom into a dark corridor and faded out finally, the Wooden Puppet faded in and started to shatter. I used the *Screen* to be the mode of the Wooden Puppet and adjusted the opacity to 70%, *Mask Shape Oval* and *Mask Feather* 30 pixels, this would make the Puppet looked like shattering in the Bubble.



Main theme.

The main theme of my animation is "The 'High' that Brings You Down." I try to keep the background simple because I wanted my message to be clear. Therefore, I created a black solid in *After Effects* with *Layer - New Solid*, then I changed its *Mask Shape* to *Oval* and *Mask Feather* 30 pixels to keep the background simple. Next, I imported the Text images into *After Effects* with *Photoshop* individual layer.



Credits Fade in and out.

This is the credits part. I typed all the text in *Photoshop* and imported the Text images with the background and key out the background color by *Keying - Color Key*, so I could use the *Filter - Basic 3D - Drop Shadow* to create a soft shadow for all my Text images. (If I imported it as a *Photoshop* individual layer, I couldn't drop a shadow out of the image's channel.)

Part_1 • Time Layout

0-02-40:17 02:00s 02:15s

Layer Name	Mode	TrkMat	V
Part_1	<input type="checkbox"/> Hide Shy Layers		
0-02-40:17	<input checked="" type="checkbox"/> Enable Frame Blending		
	<input type="checkbox"/> Enable Motion Blur		
Layer Name	Mode	TrkMat	V
13: [DrugsName/Bl...	Screen	Alpha	
14: [CircularMatte]	Normal	None	
15: [WaterDrop.mov]	Lighten	Alpha	
16: [CircularMatte]	Normal	None	
17: [WaterDrop.mov]	Lighten	Alpha	
18: [WaveyMask.mo...	Silhouette	None	
19: [Compumatrix...	Lighten	None	
20: [KidsBubble.mov]	Overlay	None	
21: [CloudMove.mov]	Normal	None	
22: [DrugsName/Ju...	Normal	None	
23: [CircularMatte]	Normal	None	
24: [DrugsName/Ro...	Overlay	Alpha	
25: [DrugsName/Po...	Luminosity	None	
26: [DrugsName/Re...	Hard Light	None	
27: [DrugsName/S...	Normal	None	
28: [CircularMatte]	Normal	None	
29: [DrugsName/Dr...	Soft Light	Alpha	
30: [DrugsName/Up...	Silhouette	None	
31: [DrugsName/Sn...	Overlay	None	
32: [CircularMatte]	Normal	None	
33: [WaterDrop.mov]	Lighten	Alpha	
34: [CircularMatte]	Normal	None	
35: [WaterDrop.mov]	Lighten	Alpha	
36: [CircularMatte]	Normal	None	
37: [WaterDrop.mov]	Lighten	Alpha	
38: [WaveyMask.mo...	Silhouette	None	

Options Transfer Controls

After Effects Time Layout
Layer 13 - 38

Part_1 • Time Layout

01:30s 01:45s 02:00s

Layer Name	Mode	T	TrkMat	V
Part_1	<input type="checkbox"/> Hide Shy Layers			
0:02:40:17	<input checked="" type="checkbox"/> Enable Frame Blending			
	<input type="checkbox"/> Enable Motion Blur			
39: [Compumatrix....]	Lighten	▼	None	▼
40: [Mermaid.mov]	Luminosity	▼	None	▼
41: [Dolphin.mov]	Soft Light	▼	None	▼
42: [CloudMove.mov]	Normal	▼	None	▼
43: [DrugsName/Gl...]	Difference	▼	None	▼
44: [CircularMatte]	Normal	▼	None	▼
45: [DrugsName/An...]	Normal	▼	Alpha	▼
46: [CircularMatte]	Normal	▼	None	▼
47: [DrugsName/Co...]	Screen	▼	Alpha	▼
48: [DrugsName/Fl...]	Overlay	▼	None	▼
49: [CircularMatte]	Normal	▼	None	▼
50: [DrugsName/Jo...]	Overlay	▼	Alpha	▼
51: [CircularMatte]	Normal	▼	None	▼
52: [DrugsName/Cr...]	Luminosity	▼	Alpha	▼
53: [CircularMatte]	Normal	▼	None	▼
54: [DrugsName/We...]	Lighten	▼	Alpha	▼
55: [CircularMatte]	Normal	▼	None	▼
56: [DrugsName/Ho...]	Overlay	▼	Alpha	▼
57: [CircularMatte]	Normal	▼	None	▼
58: [WaterDrop.mov]	Lighten	▼	Alpha	▼
59: [CircularMatte]	Normal	▼	None	▼
60: [WaterDrop.mov]	Lighten	▼	Alpha	▼
61: [CircularMatte]	Normal	▼	None	▼
62: [WaterDrop.mov]	Lighten	▼	Alpha	▼
63: [WaveyMask.mo...]	Silhouette...	▼	None	▼
64: [Compumatrix....]	Lighten	▼	None	▼

Options Transfer Controls

After Effects Time Layout
Layer 39 - 64

Part_1 • Time Layout

0:02:40:17
00s 00:30s 01:00s 01

☐ Hide Shy Layers
☒ Enable Frame Blending
☐ Enable Motion Blur

Layer Name	Mode	T	TrkMat	V
65: [CircularMatte]	Normal		None	
66: [Corridor]	Luminosity		Alpha	
67: [FireWipe.mov]	Screen		None	
68: [Cloud]	Difference		None	
69: [Inject_LastFra...]	Luminosity		None	
70: [Syringe_2.mov]	Luminosity		None	
71: [Syringe_1.mov]	Luminosity		None	
72: [PuppetOnChair...]	Screen		None	
73: [DoorOpen.mov]	Screen		None	
74: [Door]	Screen		None	
75: [Lightning]	Lighten		None	
76: Upper	Difference		None	
77: Sphere	Normal		None	
78: Bubbles	Normal		None	
79: [GoldenBall.mov]	Lighten		None	
80: [IonicsCloud.mo...]	Normal		None	
81: [KidsJump_3.m...]	Normal		None	
82: [KidsJump_2.m...]	Normal		None	
83: [Cloud]	Normal		None	
84: [KidsJump_1.m...]	Normal		None	
85: [Cloud]	Normal		None	
86: [Cloud]	Normal		None	
87: [Cloud]	Difference		None	
88: [Baby_ok.mov]	Normal		None	
89: [BabyCloud_Fir...]	Normal		None	
90: [Cloud]	Lighten		None	

Options Transfer Controls

After Effects Time Layout
Layer 65 - 90

Conclusion

After the thesis show, I think the goals that I had set out to achieve were ultimately accomplished. Furthermore, I was able to make an MTV-like animation for my thesis project. I wanted my audience to be infatuated with the beautiful and fantastic images in the beginning, and bring their emotion to horror and sadness by telling the truth in the end.

The majority of the audience enjoyed my animation, and they were interested in how I created the models and those special effects. I think I am completely successful in the infatuation part but not the horror and sadness part. I didn't make my animation look scary enough as I wished. Most of my audience could only feel the sadness but horror.

I think I should make an evaluation sheet for my thesis project during the thesis show. It might be a mistake for not asking the feedback, but non the less, I took down notes and oral feedback from each after talking to my advisors and the audience about the animation. They were helpful in providing a lot of suggestions for the improvement of the animation.

Regarding the interactive multimedia introduction, most of my audience were interested in the way I used the information about the illegal drugs. They agreed the Director effect which I used in it did interest them to read the text information.

Eventually, it was quite an experience to manage, direct, and make the whole project come together. I learned a lot from this project and I am completely satisfied with the outcome and hope to improve on it with more advanced equipment in the future.

Societal Sources

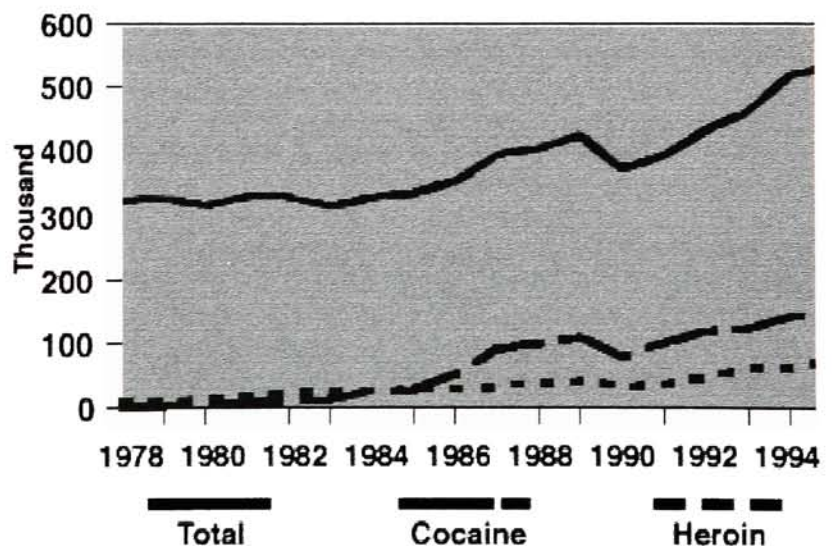
Total Drug-Related Episodes

Drug-related episodes rose by 65 percent (from 323,100 to 531,800) from 1978 to 1995, while overall emergency department visits increased by 24 percent (from 71.3 million to 88.1 million). The proportion of drug-related emergency department visits was between 0.5 and 0.6 percent during that period. The number of drug-related episodes remained stable between 1994 (518,500) and 1995 (531,800).

The rate of drug-related episodes per 100,000 population increased 37 percent from 167 in 1990 to 229 in 1995.

In 1995, 28 percent of total drug-related episodes occurred among persons aged 26-34 years, while 40 percent occurred among persons aged 35 years and over. Between 1994 and 1995, the number of total drug-related episodes rose by 12 percent for persons aged 35 years and over (from 190,100 to 213,000).

Number of Total Drug-Related Episodes, Cocaine Episodes, and Heroin Episodes: 1978-1995



In 1995, 54 percent of total drug-related episodes occurred among whites, 27 percent among blacks, and 9 percent among Hispanics; for 10 percent race was "other" or unknown. Between

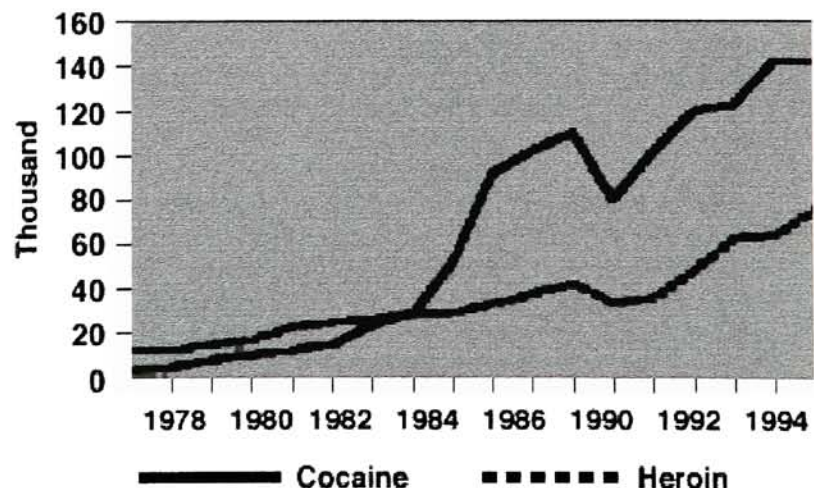
1994 and 1995, total drug-related episodes decreased by 10 percent for Hispanics (from 50,400 to 45,500). There was no change among whites or blacks.

The proportion of total drug-related episodes among men and women has been approximately equal since 1988. There was no change in drug-related episodes for women or men, between 1994 and 1995.

The most commonly reported motive for taking a substance was "suicide attempt or gesture" (203,600) which comprised 38 percent of all episodes in 1995. "Dependence" (174,600) and "recreational use" (46,900) were reported as motives in 33 percent and 9 percent, respectively, of all drug-related episodes in 1995.

The most frequently recorded reason for a drug-related emergency department visit was "overdose" (275,700) which comprised 52 percent of all episodes and increased by 23 percent since 1991 (224,200). "Chronic effects" (66,800), "unexpected reaction" (59,000), and "seeking detoxification" (53,500) were reported as reasons for the visit in 13 percent, 11 percent, and 10 percent, respectively, of all drug-related episodes in 1995.

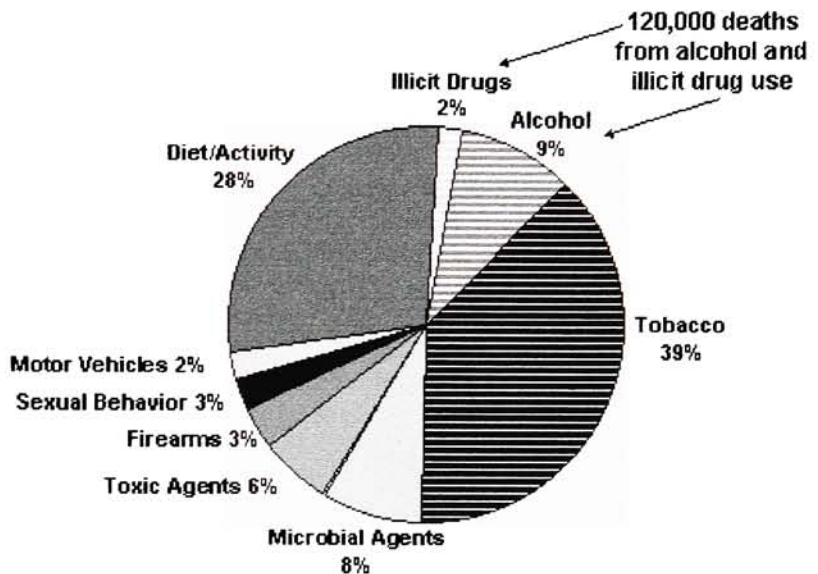
**Number of Cocaine and Heroin-Related Episodes
1978 - 1995**



Serious Health Problem

Annually about 120,000 deaths are attributed to alcohol and the use of illicit drugs.

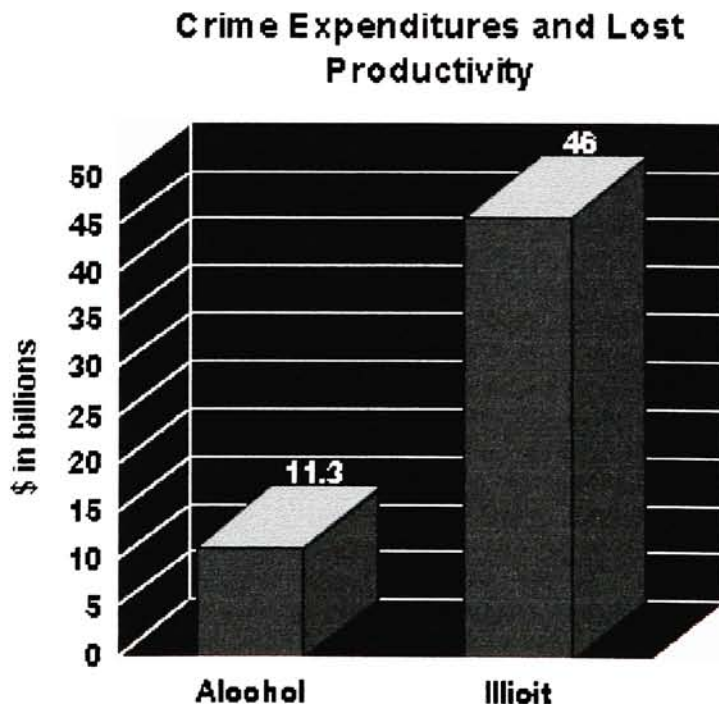
These represent 11% of preventable deaths and 6% of all deaths in the United States.

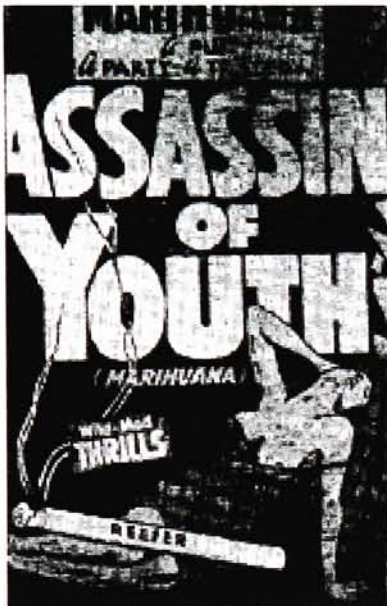


Serious Crime Problem

Alcohol- and other drug-related crime cost society \$57.3 billion in 1990.

This figure includes the direct costs of crime, lost wages of crime victims, the costs of incarceration, and losses to the economy by those who engage in crime rather than legal employment.

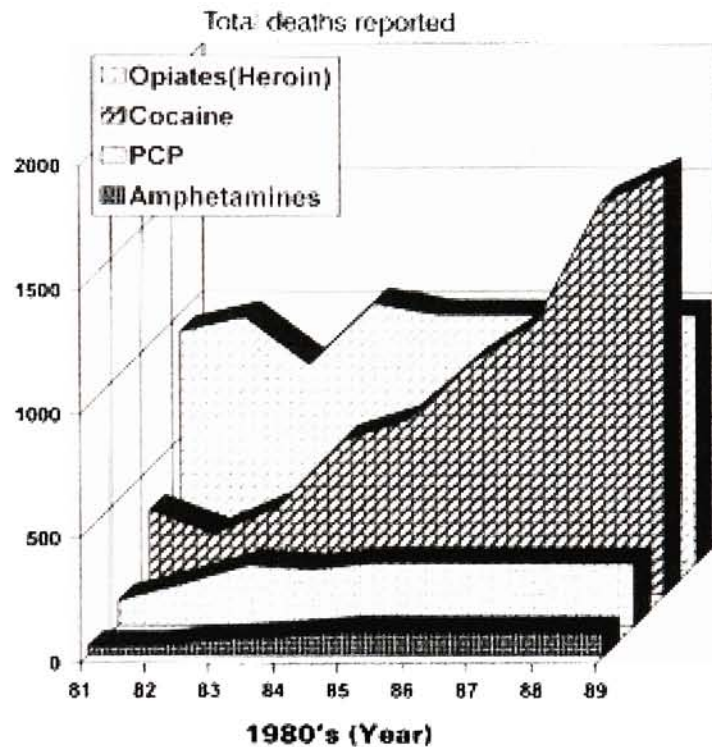




A poster of the 1930s: People still see "Reefer Madness" visions, conjured up two generations ago.

DRUG RELATED DEATHS

Number of Deaths Per Year Attributed to Illegal Drug Use



Data source: Narcotics Intelligence Nat. narc Intelligence Consumers Comm. & Pres. Comm., Am. Hab. 1986. Pp15-68.

**Drugs Effect -
The Consumers Union
Report on Licit and Illicit
Drugs**

by Edward M. Brecher and
the Editors of Consumer
Reports Magazine, 1972.

Chapter 4. Effects of opium, morphine, and heroin on addicts

The popular view of the effects of narcotics on addicts was eloquently expressed in a 1962 decision of the Supreme Court of the United States:

To be a confirmed drug addict is to be one of the walking dead... The teeth have rotted out, the appetite is lost, and the stomach and intestines don't function properly. The gall bladder becomes inflamed; eyes and skin turn a bilious yellow; in some cases membranes of the nose turn a flaming red; the partition separating the nostrils is eaten away-breathing is difficult. Oxygen in the blood decreases; bronchitis and tuberculosis develop. Good traits of character disappear and bad ones emerge. Sex organs become affected. Veins collapse and livid purplish scars remain. Boils and abscesses plague the skin; gnawing pain racks the body. Nerves snap; vicious twitching develops. Imaginary and fantastic fears blight the mind and sometimes complete insanity results. Often times, too, death comes-much too early in life... Such is the torment of being a drug addict; such is the plague of being one of the walking dead.

*When opiates are cheap, addicts generally eat them, sniff them, or smoke them (as an estimated 90 to 95 percent of American heroin users in Vietnam did in 1971; (see Chapter 20). When the drug cost is high, the same effects are achieved by injecting smaller amounts subcutaneously ("skin-popping") or intravenously ("mainlining"). Such injections, often carried out with crude and unsterile implements, contribute to the risk of infectious disease among addicts. The likelihood of infection is further increased by United States laws making it a crime to possess or sell needles, syringes, or other paraphernalia without a prescription; addicts minimize the risk of arrest by sharing their injection equipment-thus inviting cross-infection.

The classical clinical study of the effects of prolonged opiate use on the human body was performed in the narcotics wards of the Philadelphia General Hospital during the 1920s, under the impeccable auspices of the Committee on Drug Addictions of the Bureau of Social Hygiene-a Rockefeller-financed agency-and of the Philadelphia Committee for the Clinical Study of Opium Addiction. In charge were two physicians, Drs. Arthur B. Light

and Edward G. Torrance, assisted by a biochemist, Dr. Walter G. Karr, and by Edith G. Fry and William A. Wolff. The results were published by the American Medical Association in the A.M.A. Archives of Internal Medicine (1929), and in a book, *Opium Addiction*.⁶ The findings of this study are still cited as authoritative in medical textbooks.

In all, 861 male addicts-80 percent of them addicted to heroin and the others to morphine or other opiates-participated in various phases of this study. Most of them were between twenty and forty years of age. They came to the hospital more or less voluntarily (in some cases, no doubt, to escape arrest) for the stated purpose of being "cured." Most of them were criminals and most of them were poor; then as now, affluent addicts did not go to a city hospital for treatment. Here is the broad general conclusion which Dr. Light and his associates reached:

The study shows that morphine addiction is not characterized by physical deterioration or impairment of physical fitness aside from the addiction per se. There is no evidence of change in the circulatory, hepatic, renal or endocrine functions. When it is considered that these subjects had been addicted for at least five years, some of them for as long as twenty years, these negative observations are highly significant.

Details of the study were equally striking. For example, the narcotics addict is popularly portrayed as lean, gaunt, emaciated. A subgroup of about 100 addicts out of the 861 in the Philadelphia study was maintained on adequate doses of morphine and intensively examined and tested while thus maintained. Only four of the 100 were grossly underweight - emaciated. Six of the 100 were grossly overweight-obese. The group as a whole weighed within two-tenths of one percent of the norm for their height and age, as determined by Metropolitan Life Insurance Company standards. Yet these addicts before hospitalization had been taking on the average 21 grains of morphine or heroin per day⁸ more than 30 times the usual dose of the New York City street addict in 1971.

The explanation for the weight findings, which could hardly be more normal, is quite simple. The addicts in the Philadelphia study had ready access to both hospital food and hospital mor-

phine. Under these conditions, they ate well and thrived. The emaciated addict usually described in other studies is one who starves himself to save money for black market drugs-an ordeal he is able to bear more easily because of the tranquilizing effect of the drugs. The Philadelphia study established that addicts eat like anyone else when both food and drugs are readily available.

The addict is also customarily portrayed as sallow-complexioned. But, Dr. Light and his associates noted, "this change in color was practically always present in patients who lived a rather unhygienic, sedentary life. On the other hand, the skin of those who followed healthy outdoor occupations had the color of excellent health."

The Philadelphia group did notice "a slight degree of anemia" in some of their addicts on admission. This may be present, they added, "when the addict is forced to live in poor hygienic surroundings [and] when all his funds are required to purchase the drug at the expense of sufficient nourishing foods."

A similar study made at Bellevue Hospital in New York City yielded similar findings. Dr. George B. Wallace summed up both studies: "It was shown that continued taking of opium or any of its derivatives resulted in no measurable organic damage. The addict when not deprived of his opium showed no abnormal behavior which distinguished him from a non-addict."

"Since these studies appeared," Dr. Harris Isbell, director of the Public Health Service's Addiction Research Center in Lexington, pointed out in 1958, "it has not been possible to maintain that addiction to morphine causes marked physical deterioration per se."

Through the years, this has been the view of authorities familiar with addiction. Thus Dr. Walter G. Karr, the University of Pennsylvania biochemist who participated in the Light-Torrance Study, reported in 1932: "The addict under his normal tolerance of morphine is medically a well man."

In 1940 Dr. Nathan B. Eddy, after reviewing the world literature on morphine to that date, concluded similarly: "Given an addict who is receiving [adequate] morphine... the deviations from nor-

mal physiological behavior are minor [and] for the most part within the range of normal variations."

Three other authorities who had long worked with heroin addicts from New York City's slums-Drs. Richard Brotman, Alan S. Meyer, and Alfred M. Freedman-had this to add in 1965: "Medical knowledge has long since laid to rest the myth that opiates inevitably and observably harm the body."

*Drs. Dole and Nyswander found a somewhat higher level of white blood cells in the blood of some addicts prior to treatment-an effect others had noted earlier. White blood cells, of course, protect the body from infections; but an excess of them is worrisome because it may be a sign of bone-marrow pathology or of infection somewhere in the body. The bone marrow of these addicts, however, was normal, and no other infection was detected.

There is a similar disparity between the popular and the scientific views of the effects of the opiates on the human mind. In 1938, Dr. Lawrence Kolb, Assistant Surgeon General of the United States Public Health Service, and first superintendent of the service's hospital for addicts in Lexington, Kentucky, and Dr. W. F. Ossenfort reported that of more than 3,000 addicts admitted to the hospital at Lexington, not one suffered from a psychosis caused by opiates.

In 1946, Drs. A. Z. Pfeffer and D. C. Ruble compared 600 male addict prisoners at the Lexington hospital with male nonaddict prisoners serving sentences of the same length. Psychoses were no more common among the addicts than among the non-addicts. Controlled tests showed that there had been no intellectual deterioration due to morphine. Drs. Pfeffer and Ruble concluded: "The data of this study indicate that the habitual use of morphine does not cause a chronic psychosis or an organic type of deterioration."

In 1956 Dr. Marie Nyswander noted similarly: "The incidence of insanity among addicts is the same as in the general population."

Also in 1956, Dr. George H. Stevenson and his British Columbia associates gave complete neurological and psychiatric examina-

tions to imprisoned addicts, and questioned them and their relatives in an attempt to find mental deterioration. They reported: "As to possible damage to the brain, the result of lengthy use of heroin, we can only say that neurologic and psychiatric examinations have not revealed evidence of brain damage. This is in marked contrast to the prolonged and heavy use of alcohol, which in combination with other factors can cause pathologic changes in brains, and reflects such damage in intellectual and emotional deterioration, as well as convulsions, neuritis, and even psychosis."

The British Columbia report continued:

Our psychological studies do not support the common assertion that long continued heroin use produces appreciable psychological deterioration. So far as we can determine, the personality characteristics commonly seen in addicts are assumed to have been largely present before their addiction, and the same characteristics are commonly seen in most recidivist [relapsing] delinquents who do not use narcotic drugs.

Moreover, it is not evident that these personality weaknesses are aggravated or made worse by addiction as such. Years of crime, years of prison, years of unemployment, years of anti-social hostility (and society's anti-addict hostility), years of immorality-these can hardly be expected to strengthen a personality and eradicate its weaknesses. If "years of addiction" is added to these other unfavorable behavioral and environmental factors, why should the personality deterioration (if measurable) be attributed to drug addiction as if it were the only responsible factor?

Drs. Harris Isbell and H. F. Fraser of the Public Health Service addiction center in Lexington, Kentucky, reported in 1950: "Morphine does not cause any permanent reduction in intelligence."

The British Columbia group in 1956 went to considerable pains to check this finding. They dug up old child guidance clinic records and other childhood test records that could be compared with tests run on the same subjects following years of addiction to heroin. If a promising child with a high I.Q. turned into

a dull adult opiate addict with a low I.Q., opiates might be suspected as the cause of the deterioration. The cases studied, however, pointed in the opposite direction. In a number of cases, addicts who had normal or superior I.Q.'s while addicted were found to have had subnormal I.Q.'s as children. The British Columbia researchers accordingly abandoned this line of investigation, on the ground that "the comparative psychological results were undependable."²⁷ The British Columbia report also noted: "We found most of the addicts very likeable people. On the whole, they were friendly, cooperative, interested and eager to talk freely and frankly about themselves. Many of them have sensitive minds, are interested in their own psychological reactions and in philosophical problems generally. They were, on the whole, not self-conscious, were self-possessed, courteous and helpful."

In 1962 Dr. Kolb added that "Chronic psychoses as a result of the excessive use of opiates are virtually non-existent."

In 1963, Deputy Commissioner Henry Brill of the New York State Department of Mental Hygiene, chairman of the American Medical Association's narcotics committee, after a survey of 35,000 mental hospital patients, summarized the data in these terms: "In spite of a very long tradition to the contrary, clinical experience and statistical studies clearly prove that psychosis is not one of 'the pains of addiction.' Organic deterioration is regularly produced by alcohol in sufficient amount but is unknown with opiates, and the functional psychoses which are occasionally encountered after withdrawal are clearly coincidental, being manifestations of a latent demonstrable pre-existing condition."

Such views had long been commonly accepted among physicians. "That individuals may take morphine or some other opiate for twenty years or more without showing intellectual or moral deterioration," Dr. Kolb wrote in 1925,

The criterion for lack of deterioration in individuals originally useful and in good standing in the community has been continued employment in useful occupations, the respect of associates, living in conformity with accepted social customs, avoidance of legal prosecution except those brought about by violations of narcotic laws, undiminished mental activity, and unchanged per-

sonality, or, when this could not be determined, the possession of a personality that would be considered by psychiatrists to be within the range presented by nervously normal individuals or mild psychoneurotics.

We think it must be accepted that a man is morally and mentally normal who graduates in medicine, marries and raises a family of useful children, practices medicine for thirty or forty years, never becomes involved in questionable transactions, takes a part in the affairs of the community, and is looked upon as one of its leading citizens. The same applies to a lawyer who worked himself up from a poor boy to one of the leading attorneys in his county, who became addicted to morphine following a severe abdominal disease with recurrence and two operations, and who continued to practice his profession with undiminished vigor in spite of his physical malady and the addiction.

Such cases as are cited above, and they are not uncommon, have taken as much as 15 grains [900 milligrams] of morphine daily for years without losing one day's work because of the morphine.

There is thus general agreement throughout the medical and psychiatric literature that the overall effects of opium, morphine, and heroin on the addict's mind and body under conditions of low price and ready availability are on the whole amazingly bland. When we turn from overall effects to detailed effects, however, there is somewhat less unanimity of expert opinion.

Effect on sexual potency and libido. It is impossible to supply a succinct and authoritative account of the specific effects of opiates--or other drugs--on sexual behavior and response, for two reasons. First, as noted in the Introduction, no psychoactive drug has uniform effects. The effects vary from person to person and from time to time in a specific person. They vary with dose, with the expectations and desires of the user, and with the circumstances surrounding use. Thus one user may report that a drug is a sexual stimulant; another may report that the same drug is a sexual depressant.

Second, nobody has studied the sexual effects of drugs under controlled laboratory conditions. For most drugs, we can hardly

even offer an informed guess-except to suggest that the sexual effects (whether favorable or unfavorable) are probably less specific and less impressive than is usually alleged.

With respect to heroin and the other opiates, there is some anecdotal and some survey information. Both male and female addicts generally report that the opiates reduce sexual desire. This is no doubt an unwelcome side effect for many people-though it has also been suggested that some people turn to opiates because these drugs shield them from distressing sexual desires.

Many addicts report that the opiates have an effect on male sexual performance which they find desirable; ejaculation is delayed or even blocked altogether, so that coitus can be greatly prolonged or even continued indefinitely. It is said that in India during the nineteenth century this was a major reason for taking opium.

Male sexual potency is retained, at least in part, except when very large doses are taken.*

*Dr. Lawrence Kolb reported (1925): "...it was learned from addicts in this series [of 230 cases studied] that [male sexual] potency is not completely abolished until the daily dose of heroin or morphine is 15-30 grains [900 to 1,800 milligrams\$450 to \$900 worth per day at 1971 New York City black-market prices]. Desire is reduced by much smaller doses, but considerable potency remains. One thirty-five year addict raised ten children. Others addicted for years had families of average size, and men beyond sixty who had been addicted twenty years or more reported sexual competency."

The addicts studied in the 1956 British Columbia study were highly active sexually-starting at an early age and continuing with many partners-before they became addicted. Almost all sexual activity, both before and after addiction, was heterosexual.

"In the heterosexual aspects," the British Columbia group reported, "it is well known that opium and its derivatives exert a mild aphrodisiac action for a time, but after heavy drug use has developed, the heterosexual urges are less strong and potency is

commonly reduced." 33 Forty-nine of fifty men in the British Columbia study said that narcotics decreased their libido; 34 the decrease, however, was from a remarkably high pre-addiction level. Among the women, 13 out of 21 reported decreased libido when on heroin. One, however, reported increased libido, and 7 reported no change.

A 1970 study revealed that many Philadelphia addicts thought their sexual functioning was adversely affected while they were on heroin. The study did not differentiate, however, between the effects of the heroin itself and the other depressing aspects of the street addict's way of life. Perhaps the best evidence for a depressant effect of heroin on both potency and libido is the fact that addicts who complain of reduced libido and impaired sexual performance while on heroin report prompt improvement when they "kick the habit." In a group of 13 ex-addicts intensively studied at St. Luke's Hospital in New York City, for example, all "claimed their sexual problems disappeared during detoxification, whether in hospitals, detention, jails, etc." There are even reports of spontaneous orgasm in males during withdrawal from opiates. All of the evidence suggests that heroin temporarily depresses rather than permanently damages sexual function.

Effect on menstruation. Some women addicts stop menstruating while on heroin; others report delayed menstruation and other menstrual irregularities. Most observers consider this a direct effect of the heroin though Drs. George Blinick, Robert C. Wallach, and Eulogio Jerez, on the basis of experience with hundreds of young women addicts at the Beth Israel Medical Center in New York, believe that menstrual irregularities may result in part at least from the generally stressful life which addicts lead on the streets of New York.

Effect on likelihood of pregnancy. Women addicts can become pregnant while on heroin, but the likelihood of pregnancy is reduced. How much of the reduction is due to the heroin itself and how much is traceable to other aspects of being a heroin addict in the United States today (malnutrition, infection, and so on) is not known.

Effect on childbirth. It is often stated that pregnant addicts suffer "a high incidence of maternal complications such as toxemia,

abruptio placentae, retained placenta, postpartum hemorrhage, prematurity by weight, breech delivery, and high neonatal morbidity and mortality." This may be true. Such complications of pregnancy, however, are also associated with poverty, malnutrition, infection, and lack of prenatal care. No controlled studies have been made of the relative incidence of complications of pregnancy among addicted and nonaddicted women from the same neighborhood and socioeconomic status.

The findings of Drs. Blinick, Wallach, and Jerez cast some doubt on the conventional view. They studied 100 consecutive births to addicts at Beth Israel. Many of the mothers suffered from malnutrition, and 18 had positive blood tests for syphilis. Many earned their living by prostitution. Individual mothers also suffered from such conditions unfavorable to a healthy pregnancy as cancer (carcinoma in situ of the cervix), rheumatic fever, anemia, hepatitis and other forms of liver disease, epilepsy, and Class A diabetes. One addict had had ten babies; another was over forty years old; many had a history of using other drugs in addition to heroin. Almost all were heavy cigarette smokers. Two had had prior cesarean sections. Despite this concentration of unfavorable antecedent conditions, 88 of the 100 mothers gave uneventful birth to healthy babies.* The chief divergence from normal noted was low birth weight—a condition known to be associated with poverty and with cigarette smoking. Breech deliveries were also frequent; these were probably associated with low birth weight and thus with cigarette smoking and poverty. "In this series, contrary to reports and expectations," the Beth Israel team summed up, "there have been few serious complications."

*The standard test for the condition of a baby at birth, the "one-minute Apgar test," rates such factors as breathing, crying, color, etc. The scale runs from 0 to 10. Eighty-nine of the 100 babies born to heroin addicts had high (8, 9, or 10) Apgar scores.

In a series of 230 babies born at Beth Israel to addicted mothers, only two had congenital defects 42—a rate which would be considered low in a group of nonaddicted mothers.

Effect on babies born to addicted mothers. Morphine and heroin, like alcohol and nicotine, are believed to pass through the placenta and reach the unborn baby. They are also believed to enter

the mother's milk, so that a breast-fed baby is maintained on the drug and is weaned from the drug as it is weaned from the breast. There are numerous reports of withdrawal symptoms in babies who are not breast-fed; and at some hospitals opiates or other drugs are administered if a baby born to an addicted mother exhibits what appear to be opiate withdrawal symptoms.

There is not full agreement, however, on the conventional views summarized above. Thus Drs. Blinick, Wallach, and Jerez have some doubts concerning the passage of opiates to the fetus. "Placental transfer of narcotics prior to and during labor is poorly understood and the conclusions of experimentation are open to doubt," they report .

"The minute amounts of morphine that pass the placenta barrier," Dr. Blinick reported sometime later, "cannot be detected by ordinary biochemical methods." In the Beth Israel series of 100 consecutive births to heroin addicts, it proved unnecessary to administer opiates to the babies. The many reports that such babies require opiates are all based on clinical judgment; no one has divided babies into two groups at random to see whether babies who receive opiates do better than babies who merely receive good care.

Dr. Saul Blatman, the pediatrician at Beth Israel in charge of the care of the babies in the Blinick-Wallach-Jerez sample, points out that many infants born to heroin addicts, like many born to other ill or poverty stricken mothers, suffer from low birth weight and other signs of immaturity. The symptoms commonly attributed to heroin "withdrawal" may thus in fact be due to immaturity of the nervous system. Indeed, "when we talk about symptomatology in the baby, we should not label these babies as addicted, because there is no indication that they are." Dr. Blatman similarly urges that the term "withdrawal symptoms" as applied to the babies of addicts "is an unsatisfactory term, which we should eliminate."

Dr. Blatman warns particularly against "standing orders" to administer opiates or other drugs to these babies; where standing orders are in effect, "many of these babies are often 'snowed under' by depressant medication starting soon after birth." While hyperirritable babies born to addicted mothers (like those born to nonaddicted mothers) may need medication phenobarbital, chlorpromazine, or in some instances paregoric

(an opiate) the treatment should be individualized and matched to each baby's need.

In sum, many babies born to addicted mothers are born in excellent health; others suffer a handicap. How much of this handicap is traceable to the heroin and how much to malnutrition, infection, and other adverse factors has not been determined.

Effect on diagnosis of illness. An addict on morphine or heroin can feel and recognize pain. By making him more tolerant of pain, however, an opiate may lead him to postpone seeing a doctor or dentist when pain arises; thus treatment may in some cases be delayed and cure made more difficult or impossible. Poverty, of course, may also delay medical and dental treatment.

Effect on pupils of the eyes. Opiates produce in most users a constriction of the pupils of the eyes, which can decrease ability to see well in the dark. This effect usually persists, even with prolonged use of opiates.

Effect on digestion. The opiates are constipating. Indeed, codeine and opium itself (as tincture of opium or paregoric) are commonly used as a treatment for diarrhea. Some addicts must compensate for this constipating effect by taking a laxative or other aid to elimination; others have no long-term problem. "Street" heroin is sometimes adulterated with mannite, a mild laxative, to counteract the constipating effect.

Effect on stability of mood. A very serious shortcoming of the opiates in common use, morphine and heroin, is their brief period of action. An addict must take his drug two, three, or even four times a day to forestall withdrawal symptoms. Addicts whose supply is uncertain may thus tend to "bounce" from a satisfied to an incipient withdrawal state several times a day.

Effect on sweat glands. Some addicts report profuse perspiration, even after long periods on heroin or other opiates.

Other side effects. Any survey of heroin users turns up a wide variety of other complaints; headaches, joint pains, hiccups, diarrhea, nervousness, running nose, difficulty urinating, and unhappiness were among the side effects reported in a recent

Stanford University survey. These reports no doubt result at least in part from the natural human tendency of addicts and non-addicts alike to attribute whatever happens to whatever drug one currently happens to be taking.

These, then, are the deleterious physiological effects on addicts traceable to the opiates themselves. Those traceable to the narcotics laws, and to the heroin black market flourishing under those laws-including the so-called heroin overdose deaths-will be discussed in Chapter 12.

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