THE SOCIAL CONSTRUCTION OF TECHNOLOGY: THE CASE OF LSD

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(ABSTRACT)

In this study, I use SCOT (Social Construction of Technology) theories to trace the history of lysergic acid diethylamide-25, which is commonly known as LSD. I show how the technological system of LSD corresponds to phases designated by SCOT theorist Thomas Hughes, specifically invention, development, innovation, growth, competition, and consolidation.

I explain the importance of Timothy Leary and the CIA in the social construction of the LSD system, and their influences on the transformation of LSD from a chemical technology to a highly controversial drug.

Finally, I discuss the fate of LSD research today, its usage among members of the public, especially youngsters, and the usefulness of SCOT theories for this study.

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to meet with me and encouraging my work, Isa Williams for exposing me to the counterculture of southwestern Virginia, and the many people who still support psychedelic research, trusting their own minds rather than the opinions of those who happen to hold power.

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INTRODUCTION: STATEMENT OF THE PROBLEM

This study will investigate the history of the development of LSD and the sociological factors which contributed to the ensuing controversy over the drug. The problem as related to Science and Technology Studies may be defined as an attempt to understand the reasons that the chemical technology of LSD was socially constructed in such a way as to foster controversy and misunderstanding. The study will begin with an analysis of the major theories currently used by Science and Technology investigators, and a justification of my primary use of theories developed by sociologists of technology. The study will then proceed to trace the history of LSD, from its beginnings as a not- unusual chemical technology through its transformation into a highly controversial drug. Finally, I will attempt a reflexive analysis as to the usefulness of the theories of sociologists of technology for this study.

Although Science and Technology Studies researchers often equate drugs with technology, especially medical technology[1], I will briefly defend that contention here. I will not continue the debate among some Science Studies scholars as to an exact definition of technology and its distinction from science. Suffice it to say

[1]See, for example, Bodewitz, Buurma and de Vries (1987).

that I agree with Latour's (1987) notion of technoscience which, he claims, describes "all the elements tied to the scientific contents no matter how dirty, unexpected or foreign they seem," while "science and technology" designates "what is kept of technoscience once all the trials of responsibility have been settled" (174). As these ideas relate to LSD, the scientific responsibility of Albert Hofmann, the "inventor" of LSD, ended when he discovered the psychoactive effects of the drug. At this point, the drug became a technology, and the responsibility of scientists and other researchers became determining the best uses for this technology. Since I am primarily interested in the history of LSD *after* Hofmann's discovery of its mental effects, the notion of technology is more relevant to this study than the notion of science. I will employ a definition of technology in which technology refers to,

> the entire set of devices, whether mechanical, chemical, or linguistic, by which adaptations of individuals to their environments are enhanced. Plows, clubs, radios, airplanes, fertilizers, drugs, breakfast cereals, grammars, and concepts are each implements and instances of technology, which influence and are influenced by one another. Some implements operate by directly altering the environment, as when we turn on an air conditioner on a hot day. Others operate by altering the individual to meet the demands of the environment (Aaronson and Osmond 1971:3).

The technology of drugs, according to Aaronson and Osmond (1971) "is one of the oldest technologies and probably began when our ancestors browsed their

way through the forests and found that, among the foods they sampled, some produced interesting changes in how they felt, how they perceived, and how they could accommodate themselves to the world" (4).

Aaronson and Osmond go on to say that,

> Psychedelics are the newest addition to drug technology in our culture. While the use of many of these substances in their plant form is very old, their use in our culture is very recent, apart from minor experimentation by early scientists concerned with consciousness, such as William James, Wier Mitchell, and Havelock Ellis" (8-9).
>
> The development of any new major innovation in technology affects profoundly the life and structure of the society in which it occurs. The development of psychedelics is such a major innovation, which promises revolutionary changes and is, in fact, already producing them. Psychedelics may have a potential impact on society equivalent to that of the machine, which in setting off the Industrial Revolution, created much of what we now consider our `natural' and `traditional' styles of life and forms of organizing society. At the time of the beginning of the Industrial Revolution, those dispossessed by the new forms blamed the machines and tried to wreck them in the Luddite rebellion. Our modern Luddites are not the dispossessed, but those who exist at the very center of the power structure. The alteration of values, the questioning of rules by those who have had psychedelic experiences, create much consternation, often by their very own children, among individuals who have made their way by those rules and under the value system of the existing society. In addition, the negative implications of the concept `drug'...are not without their effects (16-7).

Aaronson and Osmond point to one important reason for a study such as this. Not only is it important to understand the effect of society and culture upon technology, it is imperative that we understand the effects of new technologies

upon our society and our culture. By dismissing the study of psychedelic drugs such as LSD because of their influence during the 1960s and early 1970s, we contribute to the misunderstanding of such technologies. This would be analogous to dismissing the study of power looms as too controversial because they caused the Luddites to wreak such havoc within their society. This is not to say that LSD is necessarily a neglected area of study. Books have been written which describe the history of the drug[2], and the relation of the drug to the Central Intelligence Agency of the United States[3]. However, no study has been done which approaches LSD as a chemical technology which affected society *as a technology*. As this is the approach I take, this constitutes the second reason why this study is important.

Although the evolution of LSD as a technological system, and the controversy it ignited, was an international phenomenon, I limit this study to the United States for two reasons. The first is that the majority of information I had access to refers to the United States. The second is that the concepts used in this study, although focusing upon the United States, can be applied to other countries as well.

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[2]E.g., Stevens (1987).

[3]E.g., Lee and Shlain (1985).

CHAPTER ONE: THEORIES AND METHODS

In this section I will initially discuss four main schools of theorists in Science and Technology Studies, and ultimately justify my use in this study of theories primarily developed by sociologists of technology. This section is meant to be a brief overview of current theories and methods utilized by Science and Technology investigators, as well as a more detailed description of theories and methods used by sociologists of technology.

I have chosen Thomas Kuhn to represent early ventures into the study of science and technology which were based upon the realization that Robert Merton's norms of science neglected the social aspects of science[4]. Following Kuhn's work, two main schools were developed to investigate how social processes influences science and technology--the "interests" approach, and the ethnographic/discourse analysis approach (Webster 1991:16). David Bloor here represents the interests approach, Steve Woolgar and Bruno Latour represent the ethnographic approach, and G. Nigel Gilbert and Michael Mulkay represent discourse analysis. These five scholars are known throughout the field for their work, and represent schools of thought adopted by many other theorists.

Thomas Kuhn is best known for his concepts of paradigms and scientific revolutions. He has been a major influence in all subfields of Science and

[4]See, for example, Mitroff (1974).

Technology Studies, and is arguably the best known name inside and outside Science Studies. David Bloor is best known for his school of methodology called "The Strong Programme." Scholars in all subfields of Science and Technology Studies refer to and use his methodological suggestions. Steve Woolgar and Bruno Latour are the best known, and arguably the earliest, ethnomethodologists of science. Finally, Michael Mulkay and G. Nigel Gilbert represent discourse analysis, as theirs is the primary work associated with its ideas.

THOMAS KUHN

Thomas Kuhn is arguably one of the best known theorists in Science and Technology Studies. His (1962) book The Structure of Scientific Revolutions is referred to probably more than any other work relevant to Science Studies. In it, he proposes a framework within which to understand the work of scientists. According to Kuhn, most work by scientists can be referred to as "normal science." Within normal science, scientists follow accepted paradigms relevant to each branch of science. These paradigms provide a common basis upon which subsequent work is based. Normal science proceeds without complication until "anomalies" arise. Anomalies, unexpected novelties which arise during the practice of normal science, are usually suppressed or manipulated to comply with existing paradigms. However, sometimes anomalies become so consequential that a "crisis" occurs within normal science. At the point of crisis, three possible

outcomes are possible: (1) normal science is able to handle the problem and the crisis subsides; (2) the anomaly is too difficult to be handled by the current paradigm or by new paradigms, and the problem is shelved until a time when there are more developed tools with which to handle the anomaly; or (3) a new paradigm with the capacity to handle the anomaly emerges and there is an ensuing battle for the acceptance of this new paradigm. If the new paradigm is accepted, a "scientific revolution" has occurred in which the profession has changed its view of the field, its methods and its goals.

Kuhn's analysis of science is certainly beneficial to this study, but not directly, because I am focusing on the effect of LSD upon society, *rather than upon science*. It is certainly true that LSD's effects upon the cognitive nature of science in turn contributed to its effects upon society. For example, within the psychiatric community, there was some dissention between those who believed LSD should only be utilized to obtain a model psychosis, and those who believed it could be beneficial in therapy with "normal" patients. This dissention is an example of the battle within a scientific field which Kuhn claims occurs before a scientific revolution. As Lee and Shlain (1985) put it:

> Thomas Kuhn, in The Structure of Scientific Revolutions, argues that the scientist's overriding need to make sense of his data compels him to mold it to the prevailing scientific paradigm, which defines `legitimate' problems and methods for a given historical era. There are moments, however, when the orthodox framework cannot

> bear the weight of irrefutable new evidence. A period of controversy ensues until a new paradigm emerges to encompass and transcend the previous ideology. During this transition period scientists who buck the status quo are often castigated as eccentric, irresponsible, and unscientific. Galileo, for example, was branded a lunatic and a heretic for suggesting that the earth revolved around the sun. In a similar fashion the psychedelic evidence challenged the entrenched world view of the psychiatric establishment, and proponents of LSD therapy were summarily denounced and ridiculed by those who were fixated on the model psychosis concept (68).

A further reason that Kuhn's analysis is not relevant to the heart of this study is that before the battle between competing paradigms could progress to its end, and possibly incur a scientific revolution, legislative authorities stepped in and made the outcome moot by forbidding further research with LSD and similar drugs. Because of this action, the battle was abandoned in its heat.

Perhaps a Kuhnian analysis of the history of LSD could be undertaken if psychiatric research with LSD is allowed to continue, and the battle between paradigms resumed. Certainly, such a study would be beneficial. But as long as psychedelic research is forbidden by the government, a scientific revolution propelled by psychedelic drug research will not happen. Legislative action and the ensuing cessation of psychedelic research was a result of society's reaction to psychedelic drugs such as LSD. It is the reaction of society that this study is focusing upon, and the effects, such as anti-research legislation, of that reaction.

Until research is allowed to continue with drugs such as LSD, a study primarily utilizing Kuhn's theories of science would be inconclusive.

DAVID BLOOR

David Bloor is probably best known for the four tenets he proposed that all research into the sociology of knowledge should possess. He called his proposal "The Strong Programme" for the sociology of knowledge. "The interests approach to scientific knowledge is conventionally referred to as `the strong programme' in the sociology of knowledge" (Bloor 1976:3). According to Bloor's Strong Programme, any scientific study in the sociology of knowledge should be causal, impartial, symmetrical, and reflexive. By *causal*, Bloor means that the study should be concerned with conditions which bring about beliefs or states of knowledge. Bloor believes that such studies should also be *impartial* with regard to the truth, rationality, success, and progress of the unit of analysis. No matter the opinion of the researcher or anyone else regarding these components of the subject being researched, explanations of the subject should not be influenced. By *symmetrical*, Bloor means that the same explanation for behavior should be applied no matter what the outcome of that behavior. For example, a researcher should not assume that anti-social behaviors are the result of abnormal chromosomes, while socially-accepted behaviors are the result of, for example, social conditioning. Both behaviors should have the same causal explanation, no matter what their outcome.

Finally, Bloor claims that studies in the sociology of knowledge should be *reflexive*; in other words, the method used should be self-consistent, one should be able to apply the method used to one's own study.

Bloor's tenets, developed for research into the sociology of knowledge, are more a methodology than a theory. As such, these methods are applicable to other areas of study. For my purposes, Bloor's methodology has worked to my advantage. Although not consciously employing the four tenets of the Strong Programme, I have indeed done so. My study is causal in that it investigates why society came to believe what it did about LSD. It is impartial in that it investigates a technology which was *not* successful in continuing to progress, one that did *not* succeed. It is symmetrical in that I have employed theories from the sociology of technology meant to describe ongoing, successful technologies to describe an unsuccessful technology. And it is reflexive because I ultimately consider how the theories I have used have contributed to my work, and how successful they have been.

Thus, although the tenets of the Strong Programme were not designed for a study into the sociology of technology, they are indeed applicable. However, they do not in themselves constitute an adequate theoretical basis for this study, and therefore are not the central theoretical focus.

Bloor also introduced the concept of social interests which consists of the theory that factors external to the work of scientists influence their scientific work.

Although the notion is interesting, the application of the theory is not relevant to this study, because I am not investigating the work of scientists, but the fate of a technological system. As far as technology is concerned, it has never been a question that social interests are a major contributor to the success or failure of a technological system. Indeed, they are what make or break the system. Therefore, interests theories are not relevant to this study.

BRUNO LATOUR AND STEVE WOOLGAR

Bruno Latour and Steve Woolgar are two of the earliest ethnomethodologists of science. They believe that in order to really understand the workings of scientists, sociologists must actually witness the behavior of scientists, in the same way an anthropologist would observe an African tribe, for example. They criticize the interests approach as being just another interpretation of a number of possible conclusions about the actions of scientists. They call for more reflexivity from sociologists of science and technology, for the realization that a sociologist's construction is just one of any number of possible constructions, and for the *deconstruction* of sociological pronouncements through self-reflexivity.

In order to prevent sociological constructions, ethnomethodologists actually observe scientists in the laboratory. Latour and Woolgar's (1979) Laboratory Life, for example, is an anthropology of scientists at the Salk Institute in California. By observing scientists at their work, Latour (1987) has claimed that scientific facts

are not in fact stable, and it is possible to deconstruct them. He shows "how knowledge-claims are constructed as facts through their originators establishing alliances, *networks* of association with significant others who will lend their authority to what is being said" (Webster 1991:25 *italics added*).

The concept of a network is Latour's main unit of analysis. He defines a network as "a set of positions within which an object ...has meaning... [and] it is clear that the facticity of an object is relative only to a particular network or networks" (1979:107). An object "can take on a different meaning and significance depending on the particular network of individuals for which it has relevance" (1979:110). Networks start small, and succeed by expanding.

The notion of a network is indeed relevant to this study. In fact, I employ the concept of the network to understand the technological system of LSD. However, these ideas have been developed parallel to and *outside* the ethnographic work of researchers such as Latour. "A parallel and methodologically similar analysis of wider technologies and the `systems' in which they are implicated is ... generally known as the Social Construction of Technology (SCOT)" (Webster 1991:26). It is the theories developed under SCOT which I use in this study, as they are applicable to technology, while the theories of ethnomethodologists such as Latour and Woolgar are applicable to science.

G. NIGEL GILBERT AND MICHAEL MULKAY

The work of discourse analysis is most closely associated with G. Gilbert and M. Mulkay. Discourse analysis is "a logical development of the reflexive ethnography" discussed above (Webster 1991:27). Proponents of discourse analysis argue that if scientific facts are socially constructed, it is problematic for sociologists to use the talk and writings of scientists as a resource without realizing that what scientists say is often context-bound, inconsistent, and open to interpretation. They view the written and spoken discourse of scientists as a legitimate area of study in itself, as a natural history in the progression of a scientific fact.

Like ethnomethodologies, although discourse analysis may be beneficial when investigating science, it is not particularly relevant to this study. Although it would be possible to study, for example, the discourse of the media, sorting out the facts reported from the opinions reported as facts, for example, even if that were possible it would not be particularly enlightening. Most of us realize by now the unreliability of the popular press, and in the big picture, although the media did effect the technological system of LSD by fostering a negative public opinion of the drug, it was not the major cause of the failure of the system. Therefore, although a study using discourse analysis may contribute some interesting additions to this study, it is at the most tangential to it, and at the least would reinforce commonsense knowledge.

THOMAS HUGHES AND OTHER SCOT THEORISTS

Thomas Hughes and other "social construction of technology" researchers do work similar to the work done by Latour, Woolgar, and the theorists discussed above. However, whereas the latter theorists concentrate on deconstructing science, SCOT theorists work to deconstruct technology. SCOT theorists challenge "the conventional view that technology is self-determinant and pre-given as it unfolds over time to answer the needs of society. It questions the idea that technological development has occurred through a logical, rational self-selective path....It can be seen, perhaps, that those who have developed the SCOT analysis combine elements of the constructionist ethnographic approach with the `interests' approach described earlier: successful technologies are `constructed' through a process of strategic negotiation between different groups each pursuing its own specific interests" (Webster 1991:26-7).

Prior to SCOT, the trends in the sociology of technology consisted of the "great man" concept with the central focus placed upon an individual inventor or "genius," technological determinism, and distinctions between social, technical, economic, and political aspects of the development of technology. SCOT theorists have moved away from these three trends, and have replaced the distinctions between society and technology with the metaphor of a "seamless web" of society and technology (Bijker, Hughes and Pinch 1987). Thomas Hughes has been central in the SCOT program. His (1983) book Networks of Power was one of the

earliest works asserting that technological systems are both socially constructed and society shaping. His analysis of technological systems has been extremely helpful in this study.

According to Hughes (1987), components of technological systems include physical artifacts; organizations; components "usually labeled scientific" such as books, articles, and university teaching and research programs; and legislative artifacts, such as regulatory laws. A technological system evolves in phases "in which the activity named predominates: invention, development, innovation, transfer, and growth, competition, and consolidation" (56).

The technological system of LSD evolved in the phases which Hughes described. LSD is a chemical technology synthesized (or *invented*) by a Swiss chemist in 1938. It was investigated by scientists who contributed to its *development* as a system by preparing diligent experimental reports on the drug, which they published in legitimate forums. The *innovation* of LSD from an ordinary research tool into a highly controversial "drug" was contributed to by certain researchers (such as Timothy Leary), by the Central Intelligence Agency of the United States of America, and by members of the counter culture of the 1960s and other members of the public. *Transfer*, "which can occur at any time during the history of a technological system" (Hughes 1987:66), occurred with LSD several times, the most obvious being when civilians began using the drug for

pleasure. The *growth* of LSD usage has been well-documented[5], as has the *competition* from other psychedelic drugs which had not yet been made illegal[6]. Eventually, the *consolidation* of the LSD network and its competing technologies occurred, after all psychedelics were illegalized, and proponents lobbied for less regulation.

"The phases in the history of a technological system are not simply sequential; they overlap and backtrack....[I]nvention, development, innovation, transfer, and growth, competition, and consolidation can and do occur throughout the history of a system but not necessarily in that order. The thesis here is that a pattern is discernable because of one or several of these activities predominating during the sequence of phases suggested" (Hughes 1987:56-7). The pattern which Hughes describes can be directly related to the history of LSD.

Hughes believed that the concept of a system was too complicated for a historian to adequately approximate--"Ludwig von Bertalanffy, one of the most articulate of systems theorists, needed a book, not a paragraph, to define `system'" (1983:5) But some characteristics of systems "are so general that they transcend time and place. A system is constituted of related parts or components. These components are connected by a network, or structure, which for the student of

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[5]See, for example, Department of Justice, Drug Enforcement Administration 1991.

[6]See, for example, Aaronson and Osmond 1971.

systems may be of more interest than the components" (Hughes 1983:5).

As we can see, Hughes's notion of a network complements that of Latour discussed above. According to both theorists, networks must enroll actors and actants in order to grow. According to Hughes, actor networks add to the momentum of technological systems. Momentum is acquired by technological systems "after prolonged growth and consolidation....The large mass of a technological system arises especially from the organizations and people committed by various interests to the system" (1987:76).

It is these social components, or actor networks, of the technological system of LSD, that contributed to the innovation period of LSD when the drug became more than an ordinary technology. "In the history of technology . . . a large number of relevant social groups are involved in the success or failure of any given artifact. . . . Any one of those groups, or individuals acting within the context of their group identity or (worse) combinations of those groups or (even worse yet) some other group not yet enumerated . . . may be responsible for the success or failure of any given artifact" (Cowan 1987:262). The social groups involved in and responsible for the failure of the technological system of LSD included the CIA, psychiatrists and other researchers, the media, the youth and the counter-culture, and Congress and other legislative bodies. Because technology is both socially constructed and society-shaping, these social groups shaped the fate of LSD, and LSD affected these social groups.

During each phase in the LSD system, social groups were involved and were affected. During invention, Albert Hofmann realized the potential of the agent he had synthesized and sought to explore it more fully. During development, "the phase in which the social construction of technology becomes clear" (Hughes 1987:62), scientists investigated the appropriate uses of LSD and many of these researchers coasted directly into the innovation stage, when both the CIA and researchers such as Timothy Leary contributed to the public opinion of LSD, while affecting themselves as well. The CIA went a little overboard in their experiments with unwitting American citizens and were subsequently investigated by Congress[7]. Timothy Leary lost his job at Harvard and became the "High Priest" of the psychedelic community. The general public was alarmed by the suggestions made by Leary and other out-spoken proponents of LSD that everyone should try mind-expanding drugs. Worried about the future of their children, many adults supported the legislation against LSD.

During the growth of LSD and its transfer of use to the public outside of psychiatry and intelligence, the media contributed to the panic that ensued. "News is based on conflict and deals with exceptions. A good trip on LSD is not news, nor is a good teenager. Since 1963, the newspapers have had almost nothing to say about the potential benefits of psychedelics in psychotherapy and related

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[7]See transcripts from the ninety-fifth session of Congress, August 3, 1977, for an interesting interrogation into the antics of the CIA during their mind-control experiments.

fields, including the treatment of alcoholism" (Aaronson and Osmond 1971:405). The lives of many were changed by their experiences with the drug, as they shunned the nine-to-five lifestyle in favor of a life devoted to self-exploration and self-understanding.

When the anti-LSD legislation was passed, other drugs surfaced which produced effects similar to those obtained from LSD. This comprised the competition stage of LSD. However, LSD remained quite popular throughout the sixties and into the early seventies. Its use did not begin to decline until the mid-1970s.

The final phase in the system of LSD, consolidation, is occurring today, and there is a united body of people working to ensure that, at the minimum, research with LSD be allowed to continue. They will continue to affect the fate of LSD, and LSD will affect them and their research, especially if it is legalized.

Although many social groups affected, and were affected by LSD, the two most influential were the Central Intelligence Agency of the United States of America, and Timothy Leary and other psychedelic researchers. These two groups, polar opposites of each other, had greatly differing opinions about the drug and its best uses. The CIA was interested in its uses for espionage, mind control and the like; while Timothy Leary led the fight for the drug to be accessible to all humans as their right to use for mind expansion. In this study, I have concentrated on the CIA and Timothy Leary to show how the social construction of the drug, to

the mainstream public, was based on confusion, conflicting reports, and even outright deceit.

THE IMPORTANCE OF THE CIA

The CIA represents the right wing branch in the LSD controversy, stating that the drug was too dangerous to be used by the general public. What is so interesting about the CIA in this case is that they were more than willing to experiment on the public in order to discover the effects of LSD. However, once they discovered that other technologies would be more useful for their purposes, they were no longer interested in LSD. There is some indication that they were hesitant to lose control of distribution of the drug, because they had seen first hand its potential power. Although they were not necessarily going to continue using it, they did not want anyone else to use it either.

THE IMPORTANCE OF TIMOTHY LEARY

Timothy Leary here represents the left-wing of the LSD controversy. He was so overwhelmed by the effects of LSD upon himself and his outlook on life that he felt every human should have the right to experience the technology. But more than that, he understood how important it was to continue research with LSD in order to determine its best uses. As far as the CIA was concerned, if LSD was not beneficial as a weapon or as a facilitator of espionage, then there was no

reason to continue research. But for Timothy Leary and many other psychedelic researchers, the psychoactive effects of the drug were tremendously interesting. There was some indication that it could be used to help substance abuse patients and others, and they felt continued research with psychedelic drugs such as LSD was of the utmost importance.

Both Timothy Leary and the CIA contributed greatly to the fate of the technological system of LSD, possibly more than any other social groups, and both groups will be discussed thoroughly in this study.

In this Chapter, I have reviewed major theorists in the sociology of science and technology and have justified my use of primarily those theories developed by SCOT researchers. I have also explained the importance of both the CIA and Timothy Leary to the technological system of LSD, and why it is appropriate to focus upon them in this study.

In the next Chapter, I give a brief history of the invention and development of the technological system of LSD, in order to: (1) provide background; and, (2) show that LSD started out as an uncontroversial technology.

CHAPTER TWO: HISTORICAL BACKGROUND

In this Chapter I present a brief historical discussion of LSD to illustrate how the system began as an uncontroversial chemical technology, from its invention through its early development.

INVENTION

LSD was "discovered" by Albert Hofmann, a research chemist working for Sandoz Laboratories in Basel, Switzerland. "Over and over I hear or read that LSD was discovered by accident," Hofmann said many years later. "That is only partly true. LSD came into being within a systematic research program, and the `accident' did not occur until much later. LSD was already five years old when I first happened to experience its unforeseeable effects in my own body--or rather in my mind" (1983, 25).

Hofmann first synthesized LSD (lysergic acid diethylamide) in 1938 while investigating active principles of ergot, a fungus which grows on rye and other grains. Kernels of grain infested with ergot develop into light-brown to violet-brown curved pegs. The lysergic acid portion of LSD is a natural product of the ergot fungus. The diethylamide is related structurally to the medically useful uterine stimulant ergonovine, which is an isopropanol amide. Hofmann prepared numerous substances in the series of lysergic acid derivatives. The one which

was to change his life, and the lives of many others, was the twenty-fifth substance in this series, abbreviated LSD-25.

Hofmann had planned the syntheses of LSD-25 with the intention of obtaining a circulatory and respiratory stimulant (an analeptic). He anticipated such properties for LSD because it is similar in chemical structure to an analeptic which was already known at that time (nicotinic acid diethylamide, trade name Coramine). During the testing of LSD-25 in the Sandoz lab, a strong effect on the uterus was established, and experimental animals were noted to become restless during the narcosis[8]. However, the new substance aroused no special interest in the pharmacologists and physicians at Sandoz, and testing was discontinued.

"For the next five years, nothing more was heard of the substance LSD-25," says Hofmann. "Then a peculiar presentiment - the feeling that this substance could possess properties other than those established in the first investigation - induced me to produce LSD-25 once again, so that a sample could be given to the pharmacological department for further tests" (Ibid., 26). "That was unusual because experimental substances were, as a rule, stricken from the research program if they were found uninteresting" (Hofmann 1994:38). During the final step of the synthesis, Hofmann was interrupted in his work by "unusual sensations." He later prepared a report describing the incident for his director:

[8]A narcosis is a condition of deep unconsciousness caused by a narcotic.

> Last Friday, April 16, 1943, I was forced to interrupt my work in the laboratory in the middle of the afternoon and proceed home, being affected by a remarkable restlessness, combined with a slight dizziness. At home, I lay down and sank into a not unpleasant intoxicated-like condition, characterized by an extremely stimulated imagination. In a dreamlike state, with eyes closed (I found the daylight to be unpleasantly glaring) I perceived an uninterrupted stream of fantastic pictures, extraordinary shapes with intense, kaleidoscopic play of colors. After some two hours this condition faded away (Idem.).

Because the nature and course of his experience indicated that it was caused by an external toxic influence, Hofmann suspected that he must have absorbed some of the LSD solution through his fingertips. But if it was LSD-25 causing his reaction, it would have had to be extraordinarily potent, for he knew that he could only have come into contact with a minute amount. He decided that there was only one way for him to get to the bottom of this - a self-experiment.

Three days later on April 19, 1943, exercising extreme caution, he planned the experiment using the smallest quantity that he believed could produce an effect, 0.25 milligrams[9]. Fifty minutes after orally ingesting the LSD, Hofmann started to experience dizziness, anxiety, visual distortions, symptoms of paralysis, and a desire to laugh. He asked his laboratory assistant to escort him home by bicycle (as no automobile was available due to wartime restrictions on usage). On

[9]Subsequent tests with volunteers at Sandoz demonstrated that the medium effective oral dose of LSD in human beings is 0.03 to 0.05 mg. In spite of his caution, he consumed *five times* the average effective dose.

the way home his condition "began to assume threatening forms. Everything in [his] field of vision wavered and was distorted as if seen in a curved mirror. [He] also had the sensation of being unable to move from the spot" although his assistant later told him that they had traveled very rapidly. Upon arriving home, he asked his assistant to summon a doctor, and drank some milk as a "nonspecific antidote for poisoning." The dizziness and sensation of fainting became so strong that he felt he could no longer hold himself erect, and he had to lie down on a sofa. "Everything in the room spun around, and the familiar objects and pieces of furniture assumed grotesque, menacing shapes. They were in continuous motion, animated, as if driven by an inner restlessness" (Ibid., 27).

Not only did Hofmann experience visual distortions, but also the mental effects which were to make the drug so controversial:

> Even worse than these demonic transformations of the outer world were the alterations that I perceived in my self, in my inner being. Every exertion of my will, every attempt to put an end to the disintegration of the outer world and the dissolution of my ego, seemed to be wasted effort. A demon had invaded me, had taken possession of my body, soul, and mind (Idem.).
>
> I jumped up and screamed in order to free myself from him, but sank down again powerless on the sofa. The substance triumphed over my will. A dreadful fear grasped me that I was becoming insane. I was taken to another world, another time. My body seemed to be without sensation, lifeless, strange. Was I dying? Was this the transition? At times I believed myself to be outside my body, and then perceived clearly, as an outside observer, the complete tragedy of my situation. I had not even taken leave of my family. Would they ever understand that I had not experimented thoughtlessly, but rather with the utmost caution

> and that such a result was in no way foreseeable? My fear and despair intensified, not only because a young family might lose its father prematurely, but also because I thought of having to break off unfinished my work, which meant so much to. Also, the reflection emerged, full of acrimonious irony, that I was to be compelled to leave this world behind prematurely through the use of this lysergic acid diethylamide that I had brought into the world (1994: 39).

When the doctor arrived, he could detect no abnormal symptoms other than extremely dilated pupils. Hofmann's pulse, blood pressure and breathing were all normal. Slowly, Hofmann "came back from a weird, unfamiliar world to reassuring everyday reality. The horror diffused and gave way to a feeling of good fortune and gratitude." He began to be reassured that the danger of insanity was past, and to enjoy the kaleidoscopic display of fantastic colors and images which danced behind his closed eyes. "Images surged in on [him], alternating, variegated, opening and closing themselves in circles and spirals, exploding in colored fountains, rearranging and hybridizing themselves in constant flux. Every acoustic perception, such as the sound of a door handle or a passing automobile, became transformed in to optical perceptions" (1994:40). Eventually, he fell asleep, and awoke the next morning with "a clear head, though still somewhat tired physically. A sensation of well-being and renewed life flowed through [him]. The world was as if newly created. All [his] senses vibrated in a condition of highest sensitivity, which persisted for the entire day" (Ibid., 28).

It may not have been a total surprise to Hofmann and other scientists at

Sandoz that LSD caused such mental effects. Numerous stories about ergot, the natural source of lysergic acid, had been passed down through the ages. "The rye fungus had a mysterious and contradictory reputation. In China and parts of the Mideast it was thought to possess medicinal qualities, and certain scholars believe that it may have been used in sacred rites in ancient Greece. In other parts of Europe, however, the same fungus was associated with the horrible malady known as St. Anthony's Fire, which struck periodically like the plague. Medieval chronicles tell of villages and towns where nearly everyone went mad for a few days after ergot-diseased rye was unknowingly milled into flour and baked as bread" (Lee and Shlain 1985:13). Until recent times epidemic-like occurrences of ergot poisoning have been recorded in most European countries and also in certain areas of Russia. "With improvements in agriculture and with the understanding that ergot-containing bread was the cause, the frequency and extent of ergotism epidemics diminished considerably. The last great epidemic occurred in certain areas of southern Russia in the years 1926-27" (Hofmann 1994:37).

DEVELOPMENT

The psychotropic activity of LSD made it a valuable tool for psychiatric and neurophysiological research. The first recorded reference to LSD is Stoll and Hofmann's 1943 description of its synthesis and its oxytoxic effect on the uterus

of rabbits (Cohen 1968)[10]. It attracted worldwide interest in professional circles and was distributed by Sandoz under the trade name Delysid, with a prospectus mentioning the following indications for use:

> a) Analytical psychotherapy, to elicit release of repressed material and provide mental relaxation, particularly in anxiety states and obsessional neuroses.
>
> b) Experimental studies on the nature of psychoses: by taking Delysid himself, the psychiatrist is able to gain an insight into the world of ideas and sensations of mental patients. Delysid can also be used to induce model psychoses of short duration in normal subjects, thus facilitating studies on the pathogenesis of mental disease (Hofmann 1983:29).

Numerous articles reporting results of LSD research began appearing frequently in professional journals, the number gradually increasing until 1960, when the amount plateauxed at around one hundred reports per year. Promising results were described from the use of LSD in psychiatry and biology. One finding that was of interest, given the intense visual effects of the drug, was that it was not concentrated in the visual cortex, but it was concentrated in the deep visual reflex centers such as the lateral and medial geniculate bodies and the optic chiasm.

During the early 1950s the dominant idea in the psychiatric community was that LSD was a "psychotomimetic" or "madness-mimicking agent." It was hoped that LSD could shed new light on diseases such as schizophrenia, for it was believed that experimenters who ingested LSD themselves would know what

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[10]It was not until 1947 that Stoll reported Hofmann's accidental exposure and subsequent self-experiment.

schizophrenics experienced; LSD was believed to produce a "model psychosis." An upsurge of interest in neurochemistry resulted from LSD research, based on the idea that "if trace amounts of a substance could induce pronounced changes in perception, cognition, affect, and ego structure up to and including hallucinations, delusions and depersonalization, then the search for a chemical basis of mental activity could be rewarding" (Cohen 1968:31). New frontiers in the field of experimental psychiatry also resulted from these ideas.

Many researchers focused their attention on the comparison between an LSD-induced state and true psychosis. In 1962, Dr. Bruno Manzini of Italy compared the two:

> There are considerable differences between LSD-induced and schizophrenic symptoms. The characteristic autism (mental inversion) and dissociation of schizophrenia are absent with LSD. Perceptual disturbances due to LSD differ from those due to schizophrenia and, as a rule, are not true hallucinations. Finally, disturbances of consciousness following LSD do not resemble those occurring in schizophrenia (Cashman 1966:35).

Other researchers experimented with the use of LSD in psychiatric therapy. "Our reasons for using LSD [in psychiatric therapy in the 1950s and 60s] were that while consciousness was maintained, resistance could be overcome, regression speeded up, transference intensified, recall facilitated, abreaction promoted, gain of insight assisted, and capacity for introspection increased" (Cashman 1966:154). Two types of LSD therapy were explored by researchers. *Psycholytic* therapy

entailed a continued series of LSD sessions with a therapist, in which, over a period lasting up to several months, the goal was to uncover the basic conflicts and symptoms within the patient through ventilation, catharsis, and abreaction. *Psychedelic* therapy entailed a single massive dose of LSD in one protracted session "in order to achieve the `rebirth' or `transcendental' conversion experience" (Ditman 1968:51). The aim of psychedelic therapy was to create in the patient a feeling of "new awareness of self, aesthetic appreciation and even religious ecstasy in which the patient has a new outlook, feels cleansed and reborn, without the need for the crutches he has been using to sustain himself--crutches such as alcohol or other neurotic patterns of defense such as phobias, frigidity, depression, or psychosomatic illnesses" (Idem.). Well over 500 articles were published before 1960 in which claims were made that psychiatric patients suffering from disorders including alcoholism, psychosis, suicidal depression, neuroses, homosexuality (then considered a disorder), frigidity, and other sexual problems substantially benefitted from therapy with LSD (Ditman 1968). "Psychedelic therapy has an analogue in Abraham Maslow's idea of the peak experience. The drug taker feels somehow allied to or merged with a higher power; he becomes convinced that the self is part of a much larger pattern, and the sense of cleansing, release, and joy makes old woes seem trivial" (Grinspoon and Bakalar 1983:132)

LSD research with alcoholics seemed especially promising. Reports on research with alcoholics claimed improvement rates up to 94 percent, whereas the

average improvement rate for all reports was about 60 percent (Ludwig, Levine and Stark 1970), although there was some controversy as to the reliability of these claims[11].

Research with LSD at this time was profuse. For example, the 1955 Journal of Psychology contains thirteen articles related to LSD. It is interesting to look at the funding agencies who contributed to the researchers. Out of the thirteen reports in the Journal of Psychology for the year 1955, which I randomly chose to sample, eight were funded by the Geschickter Fund for Medical Research, and four were funded by the Josiah Macy, Jr. Foundation Both of these were later shown to be Central Intelligence Agency conduits. So out of thirteen reports in the one year which I sampled, twelve were funded by the CIA. Many researchers received thousands of dollars in funding from cut-outs like the Josiah Macy, Jr. Foundation, and it apparently was not known at the time that the CIA was sponsoring LSD research.

In this Chapter I have given an overview of the invention and development of the technological system of LSD. I have shown that it did not begin as a

[11]See Ludwig, Levine and Stark 1970 for a discussion of several studies with alcoholics and their final, negative evaluation of LSD therapy.

controversial technology, that it was influential in psychiatry and psychology, and that the CIA stepped in during the early research with LSD.

In the next Chapter I will discuss why the CIA was so interested in LSD and how they contributed to its social construction.

CHAPTER THREE: THE ROLE OF THE CIA

Much of the material in this section is based upon information obtained by Martin Lee and Bruce Shlain from a special reading room in Rosslyn, Virginia to which they gained access. They were able to study recently declassified documents pertaining to Operation MK-ULTRA and other CIA mind control projects. Even though the documents had been declassified as a result of the Freedom of Information Act, some of them were still heavily censored. Their findings were published in their book Acid Dreams, to which all references refer unless otherwise specified.

BACKGROUND

Since the spring of 1942, the Office of Strategic Services (OSS), the CIA's wartime predecessor, had been conducting a top-secret research program whose mission was to develop a speech-inducing drug for use in intelligence interrogations. Numerous drugs were surveyed and rejected, including alcohol, barbiturates, caffeine, and peyote. Marijuana was thought for a while to be the best candidate, and numerous tests were carried out on witting and unwitting[12] subjects. Eventually, it was decided that the effects of marijuana were too random, sometimes stimulating a "rush of talk," sometimes causing such extreme paranoia that the subjects would not say a word.

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[12]It was possible for marijuana to be administered covertly because OSS scientists had created a high potent extract of cannabis in a clear liquid which had no color, odor, or taste. The liquid was then injected into such things as mashed potatoes, butter, and salad dressing, and even onto facial tissues, cigarettes, and cigars.

After World War II, the CIA and the military picked up where the OSS had left off. Mescaline, cocaine, and heroin were investigated, and some CIA scientists experimented with alternate injections of barbiturates and stimulants, resulting in confusion that would cause the subject to let his guard down and reveal secrets.

THE CIA AND LSD

The CIA became interested in experimentation with LSD in the early 1950s after reading some of the publications by Hofmann and other LSD researchers, and resolved to learn every detail of every study. In a communique dated May 26, 1954, the CIA ordered "all domestic field offices in the United States to monitor scientists engaged in LSD research. People of interest `will most probably be found in biochemistry departments of universities, mental hospitals, private psychiatric practice...'" (26). Arthur Stoll, president of Sandoz, agreed to notify the CIA whenever new LSD was produced or a shipment was delivered to a customer.

Conduits like the Macy Foundation were established as a clandestine way to fund LSD experimenters and in so doing keep close tabs on them. Researchers on CIA stipends published one version of their work in scientific journals, omitting secret data that was given only to the CIA on such "`operationally pertinent categories'...as disturbance of memory, alteration of sex patterns, eliciting information, increasing suggestibility, and creating emotional dependence" (22-3).

Not only did the CIA covertly finance legitimate researchers, they carried out their own experiments as well. BIG CITY was a CIA experiment in which the tailpipe of a 1953 Mercury was extended eighteen inches over its normal length. It was then driven for a total distance of eighty miles around New York City, emitting a gas of LSD in order to study its effect on citizens who came in direct contact with the gas. BIG CITY was carried out once a week for over a year. In another operation, operatives would travel on New York City subways with battery-operated emission apparatus in briefcases to see if the LSD could be secretly administered to individuals in a confined space and what its effect would be. The agents themselves wore nasal filter cartridges inserted high into their sinus cavities.

Initial reports on the CIA research seemed promising to the Agency. "In one instance LSD was given to an officer who had been instructed not to reveal `a significant military secret.' When questioned, however, `he gave all the details of the secret...and after the effects of the LSD had worn off, the officer had no knowledge of revealing the information (complete amnesia)'" (14). The CIA was elated. They had longed hoped for a drug that could induce people to disclose secrets with no memory of doing so.

The elation was short-lived, however, when further research revealed that accurate information could not always be obtained, due to paranoia and anxiety (which would cause the subject to clam up), loss of contact with reality (which would cause the subject to babble gibberish), or delusions of grandeur (which

would cause the subject to become convinced that he could defy his interrogators indefinitely). In addition, complete amnesia rarely occurred, and the subjects could usually remember at least some of what had taken place.

"When CIA scientists tested a drug for speech-inducing purposes and found that it didn't work, they usually put it aside and tried something else" (15). They did not, however, give up on LSD when their earlier optimism was dwindled. They believed that there must be some use for such a powerful and potent substance, even if it was not a reliable truth drug. They were especially intrigued by the immense effects that a minute quantity of LSD could produce, as well as its difficulty to detect, being colorless, odorless, and tasteless.

At one point, CIA officials thought that LSD could effectively be used as an *anti-interrogation* substance: If secret agents were given micro-pellets of LSD to take on dangerous missions, they could take the pellets before being interrogated so that they would only jabber nonsense rather than disclose important secrets.

There was great concern within the CIA that the Soviets and Red Chinese might themselves be experimenting with LSD or similar substances. A survey conducted by the Office of Scientific Intelligence noted that ergot was a commercial product in many Eastern Bloc countries; however, although it also flourished in the Soviet Union, the Soviets had not distributed ergot to foreign markets. Some CIA officials worried that the Soviets were hoarding their supplies in order to convert raw ergot into a mind-control weapon, especially since

information on the chemical structure of LSD had been available in scientific journals since 1947. Along these lines, the CIA began administering LSD to trainee volunteers, so that if they were ever caught by the Communists and dosed with LSD, they would be familiar with its effects and not as likely to lose control and begin to talk. "CIA documents actually refer to agents who were familiar with LSD as `enlightened operatives'" (17).

The CIA also used LSD during its own interrogations:

> When employed as a third-degree tactic, acid enabled the CIA to approach a hostile subject with a great deal of leverage. CIA operatives realized that intense mental confusion could be produced by deliberately attacking a person along psychological lines. Of all the chemicals that caused mental derangement, none was as powerful as LSD. Acid not only made people extremely anxious, it also broke down the character defenses for handling anxiety. A skillful interrogator could exploit this vulnerability by threatening to keep an unwitting subject in a tripped-out state indefinitely unless he spilled the beans. This tactic often proved successful where others had failed. CIA documents indicate that LSD was employed as an aid to interrogation on an operational basis from the mid-1950s through the early 1960s (19).

On April 7, 1953, CIA director Allen Dulles authorized Operation MK-ULTRA, the CIA's major drug and mind control program during the Cold War. Not long after that, Dr. Sidney Gottlieb, the chemist who directed MK-ULTRA, approved a plan to give LSD to unwitting American citizens. He believed that LSD could be used for more than interrogation purposes. For instance, a CIA document notes

that "administering LSD `to high officials would be a relatively simple matter and could have a significant effect at key meetings, speeches, etc.'" (28). In order to bridge the gap between testing LSD in a laboratory and in everyday life situations, agents began using LSD themselves because they felt that first-hand knowledge of the subjective experience of the drug was important. Next, they agreed among themselves to slip LSD into each other's drinks, so that the subject did not know he had been dosed until he began to experience the effects. Eventually, they started dosing other CIA agents who were not involved in the program and had never taken LSD before. Things began to get a little out of control, and at least one person committed suicide after an unexpected LSD experience[13].

The purpose of these "acid tests" was to figure out how to employ LSD in espionage operations; the purpose was *not* to explore mystical realms or higher states of consciousness. "Nevertheless, there were times when CIA agents found themselves propelled into a visionary world and they were deeply moved by the experience. One MK-ULTRA veteran wept in front of his colleagues at the end of his first LSD experience. `I didn't want to leave it,' he explained. `I felt I would be going back to a place where I wouldn't be able to hold on to this kind of beauty.'

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[13]See The Washington Post, Tuesday, November 29, 1994 for a report into the investigation of this death, and a discussion of whether it was indeed suicide rather than homicide.

His colleagues assumed he was having a bad trip[14] and wrote a report stating that the drug had made him psychotic" (30).

Soon, the CIA decided to give LSD to unwitting Americans and record their reactions. Operation Midnight Climax consisted of a brothel equipped with two-way mirrors and a squad of prostitutes who would go out into San Francisco to lure back visiting businessmen. The unsuspecting citizens would be dosed with LSD, usually through a contaminated drink; in one series of experiments, LSD would be sprayed into the bathroom before the man used it. In 1963, the CIA's Inspector General raised the question of ethics. "That an arm of the U.S. Government had been testing behavior-change drugs on unsuspecting U.S. citizens didn't alarm the Inspector General so much as what might happen if the unsuspecting public ever found out" (Stevens 1987:84).

During the early 1960s, the CIA and the military began to phase out their experiments with LSD in favor of more powerful chemicals, such as BZ, a drug which inhibits the production of a chemical substance that facilitates the transfer of messages along the nerve endings, thereby disrupting normal perceptual patterns for about three days. Unlike LSD, BZ was very effective when inhaled and could therefore be successfully administered on a large-scale through bombs, smoke, and other such means.

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[14]The words "trip" and "tripping" were coined by army scientists to describe an LSD session.

But the CIA experimentation of LSD had already led to the realization by American citizens that such a drug existed. By the late 1950s, according to former Assistant Surgeon General of the Army Robert Bernstein, "*perhaps* by coincidence, LSD was almost simultaneously recognized by the army as a military threat and by certain segments of our U.S. population as a means for self-fulfillment" (Lee and Shlain 1985:54, *italics added*).

In this Chapter I have shown that the CIA was influential in the early research of LSD, that they were interested in the drug for purposes of mind control and espionage, and that although they were to later claim that the drug was too dangerous for citizens, they were more than willing to experiment on unwitting Americans for their purposes. Additionally, I have shown that they were fearful of the effect uncontrolled distribution of the drug would have on American society, which set the stage for their support of anti-LSD legislation, and contributed to the negative public opinion of the drug.

In the next Chapter, I will show the importance of Timothy Leary, among other researchers, to the social construction of LSD.

CHAPTER FOUR: THE ROLE OF TIMOTHY LEARY

Unless otherwise indicated, all references in this section are from Flashbacks, Timothy Leary's autobiography written in 1983.

BACKGROUND

In the spring of 1959, Dr. Timothy Leary was living in Florence, Italy, on a "self-imposed European exile," reading philosophy and thinking. He had not yet recovered from the suicide of his first wife and mother of his two children four years earlier. Leary had quit his job as Director of Psychological Research at the Kaiser Foundation Hospital in Oakland, California a year earlier, feeling confused about his profession. No matter what kind of psychiatric therapy he and his colleagues used, the success-rate was always the same - one third improved, one third stayed the same, and one-third got worse.

One day, Frank Barron, an old friend of Leary's from graduate school who was passing through Europe on sabbatical dropped by. This visit would change Leary's life in two ways which actually merged. Barron told Leary that David McClelland, director of the Harvard Center for Personality Research was taking his sabbatical leave in Florence, and that he might be able to help Leary get a job. Barron also told Leary about some unusual experiments he had recently performed with a psychiatrist in Mexico who had been producing visions and trances with

mushrooms. Barron had sampled the mushrooms and was "burning to tell [Leary]...about William Blake revelations, mystical insights, and transcendental perspectives produced by the strange fungi." Leary "was a bit worried about [his] old friend and warned him against the possibility of losing his scientific credibility if he babbled this way among [their] colleagues" (16-7).

Leary met with and impressed McClelland, and was offered a job at Harvard. He arrived in Cambridge in January 1960 - it was merely a coincidence, although maybe a meaningful one, that his arrival also marked the beginning of the sixties decade. His first semester at Harvard was quiet and uneventful, and when it was over he embarked on a summer vacation in Mexico with some other academics.

It was during this Mexican holiday in the summer of 1960 that Leary first ingested a psychedelic drug. Some scholars he was with had heard that the mushrooms were being used by soothsayers, and were able to obtain some from a *curandera*, a wise-woman. Remembering Frank Barron's "joking prediction that the mushrooms might be the tool for changing the mind that [they] had been looking for," (30) Leary agreed to try them[15]. His own description of his reaction reflects their great effect on him:

> In the twenty-one years since eating mushrooms in a

[15]At the time, Leary had not even used marijuana.

> garden in Mexico, I have devoted most of my time and energy to the exploration and classification of these circuits of the brain and their implications for evolution, past and future. In four hours by the swimming pool in Cuernavaca I learned more about the mind, the brain, and its structures than I did in the preceding fifteen as a diligent psychologist.
>
> I learned that the brain is an underutilized biocomputer, containing billions of unaccessed neurons. I learned that normal consciousness is one drop in an ocean of intelligence. That consciousness and intelligence can be systematically expanded. That the brain can be reprogrammed. That knowledge of how the brain operates is the most pressing scientific issue of our time. I was beside myself with enthusiasm, convinced that we had found the key we had been looking for (33).

It is clear that Leary did not classify hallucinogenic drugs the way most other scientists at the time did - as psychotomimetics. He immediately understood their usefulness as tools for transcendence and mind-expansion. He reevaluated his task as a psychologist and from then on dedicated himself to exploring new realities that could be reached within the mind.

Soon, Leary was to find "that the world was divided into those who had the experience (or were eager to have it) and those who had not (and shuddered at the possibility). In years to come it also became apparent that emotional connections developed between those who had. This sharing of the secret about the potentials of the brain later became a significant and widespread social phenomenon" (34).

Leary, Barron, and Richard Alpert, a fellow Harvard professor, decided to

begin a psychedelic research program at Harvard. Unlike other researchers at the time who were experimenting with such drugs, they were interested in gathering data about how "normal" people reacted to hallucinogenics. They decided that their experiments "would not follow the medical model of giving drugs to others and then observing only external results" (37), but that the best plan of action would be to first teach themselves how to use the drugs and run research sessions[16]. As Leary describes: "Since we were using a new kind of microscope, one which made visible an extraordinary range of new perceptions, our first task was to develop experimental manuals on how to focus the new tools. The scientists we trained could then use the drugs precisely and safely, on themselves and others, to study any and all aspects of psychology, aesthetics, philosophy, religion, life" (37).

The drugs Leary's research group used were obtained from Sandoz Laboratories. Because the Harvard group were considered qualified researchers, they were able to acquire the drugs free of charge. The Harvard group began their experiments using psilocybin[17], which they used until they were introduced to LSD

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[16]This idea ironically sounds very similar to that of the CIA agents first used the drug themselves before to testing it on unwitting Americans. However, Leary never considered administering any drug without full knowledge and consent of the subject.

[17]Psilocybin is Albert Hofmann's name for the active principles of the "magic mushrooms" from Mexico, which he isolated in 1958, fifteen years after the discovery of LSD. Hofmann was very surprised to find that the active principles of the mushrooms were lysergic acid derivatives which were very closely related

and found it more potent.

It was not long before animosity arose between some of the Harvard faculty and the research group. Almost all of the graduate students signed up for the "brain-drug training" which caused great jealousy within the psychology department. Leary and Barron offered to set up sessions for the other faculty, but most declined. "They had no paradigms by which to understand this new phenomenon, so they weren't interested. They simply wanted their allotment of graduate students back" (43).

Leary immediately understood the significance of the division between those who accepted the implications of hallucinogenic drugs and those who did not: "The differences between those who wanted to explore new brain terrain and those who reflexively avoided the challenge foreshadowed the bitter cultural conflict that raged everywhere in the decade to come" (43).

By December of 1960, Leary and his research group had become aware of "an international network of scientists and scholars experimenting with psychedelic drugs like psilocybin, LSD, and mescaline. They varied widely in age and temperament and held widely different ideas about how the drugs should be used. One powerful premise was common to all: these plants and drugs, as expanders of human consciousness, could revolutionize psychology and philosophy. Many of these men and women were psychiatrists who had personally experienced one

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to lysergic acid diethylamide.

or more of the drugs and hoped to fit them into the medical-treatment model" (45). The experimenters involved in therapeutic applications (for such things as psychotherapy and treating neurosis and alcoholism) urged Leary's group to work within the system. "Their message was: `Society has assigned the administration of drugs to the medical profession for healing disease. Any non-doctor who gives or takes drugs is a dope fiend. Play ball with the system. Capture the medical profession the way Freud did" (45). But "the philosophers and scholars in the movement saw that the promise of the drugs went beyond medical treatment. They realized we were using drugs to restate in modern psychological terms the platonic-pagan-gnostic vision of a world *within* containing blueprints that would enable us to understand, harmonize, and collaborate with the physical laws of the external world" (46).

One night, when experimenting with Allen Ginsberg, Leary and his group began talking about how it seemed to them that "wars, class conflicts, racial tensions, economic exploitation, religious strife, ignorance, and prejudice were all caused by narrow social conditioning. Political problems were manifestations of psychological problems, which at bottom seemed to be neurological-hormonal-chemical. If [they] could help people plug in to the empathy circuits of the brain, then positive social change could occur" (50). In Leary's words: "It was then that we started plotting the neurological revolution, moving beyond scientific detachment to social activism. We would no longer be psychologists collecting

data. We would create data" (Idem.).

Allen, "the quintessential egalitarian," wanted everyone to have the option of taking mind-expanding drugs. He called it "the fifth freedom--the right to manage your own nervous system." The Grand Plan seemed quite logical to them. First, they would initiate and train influential Americans in consciousness expansion, who would in turn help to generate a wave of public opinion to support massive research programs, licensing procedures, and training centers for the intelligent use of drugs. "It was at this moment that we rejected [Aldous] Huxley's elitist perspective and adopted the American egalitarian open-to-the-public approach. And thereby hangs the tale" (50).

Leary was very serious about the work he was conducting. When Neal Cassady, infamous member of the Beats, showed up at Harvard wanting to "gobble down everything you are learning about these wonderful magical mystical drugs," Leary replied cautiously, "I'm afraid you have the wrong idea. We're scientists here, preforming experiments in consciousness alteration and self-induced brain change" (51). When Cassady pressed him for more information, Leary explained, "We are giving drugs to volunteers under a variety of sets and settings to chart the range of reactions...We spend considerable time before the drug session training our subjects, alerting them to what they can expect. We've found that with adequate preparation, subjects have little trouble and can master the fears involved" (52). Leary explained that the fears came from the social

atmosphere which was wary of things new and strange, especially when the word *drug* is involved. Leary told Cassady that although the undergraduate students at Harvard were usually eager for the experience, he and his team had agreed not to use them as subjects, even though "the older the subject, the more fear seems to exist. It's my guess they're afraid of losing something that the young haven't gotten attached to" (Idem.).

Cassady replied that this was "pedantic nonsense" and that Leary and his group should lighten up. He said there were plenty of "hip people" in New York who would love to help him with his drug research, and invited him for a visit.

Leary accepted the invitation and agreed to provide Cassady and two friends with psilocybin if they would compare its effects to other drugs they had taken. "Psychopharmacologists haven't yet been able to collect this kind of comparative phenomenological data" he said as they were preparing to begin.

"You mean, man, you want us to get high on your drug and compare it with other stuff we've done?" came the answer.

Leary was fascinated by the "calm devotion, the almost religious commitment of the beatniks to the moment of ingestion. Used to the giggling nervousness, the uneasy rationalization, the tightfaced panic with which Harvardites approached the drug, [he] found [Cassady and the other two subjects] serious, hopeful, and wise. They were connoisseurs, experienced space-travelers approaching a promising new planet" (54).

Cassady's report on the experience was interesting to Leary: "I'll give you one expert's opinion. This combines the good sides of every other drug with none of the bad. This is the ultimate luxury, the flawless wisdom-pleasure hit. More mellow and cozy than heroin, but you don't nod out. I feel more alive and wired and energetic than with speed, but not jangly. It's got the blast of cocaine, but it lasted ten times longer" (55).

Driving back to Cambridge, Leary reviewed what had been learned from this unusual experiment: "The four of us had reached a place where we were momentarily beyond social roles, beyond normal strivings. We had apparently tapped some meditative overview circuit of our brains that allowed us to share a moment of philosophic understanding, linking an Ivy League intellectual and three very earthy and very free spirits" (55).

The ability of the drug to connect diverse people in empathetic bonds suggested exciting social applications to Leary. Once people learned to share other's perceptions, he believed a higher level of human communication might be possible.

By the spring semester of 1961, Leary and the others involved in the Harvard Psychedelic Drug Research Project believed that they had discovered "the long-sought after philosopher's stone, the key to increased intelligence" (71). But as scientists, they were frustrated "with the unavoidable problem in the field of psychiatry. How do you demonstrate that someone has improved?" (78). They

decided to try an experiment in prison-rehabilitation, "the behavioral scientist's dream, an iron-clad objective index of improvement - the recidivism rate" (79).

Psilocybin was given to thirty-five inmates at the Massachusetts Correctional Institute in Concord[18], after intensive counseling about the possible effects of the drug. After the administration of the psilocybin, objective tests showed that the prisoners showed less depression, hostility, and anti-social tendencies, and more energy, responsibility, and cooperation. The men started being paroled, and in the second year of the project, only ten percent of the convicts in the group had returned to jail, as opposed to a normal recidivism rate at the prison of seventy to eighty percent[19].

LEARY AND OTHERS DISCOVER LSD

In 1962, Timothy Leary tried LSD for the first time when it was offered to

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[18]Because Leary's ideas were not well-received by many, he was rather wary as to what the reactions of the prison officials would be to his plan. When he first came face to face with the prison psychiatrist and saw that he was black, he was elated: "Hurray! Philosopher Thomas Kuhn said that when you wish to introduce change-technology to a culture, you'll find your best allies among the outsiders, those whose alienation from the establishment makes them more open to change" (83).

[19]Leary points out that the success of this project was in part due to the sense of comradeship which occurs when people share a trip together. After the convicts left prison, a buddy-system was developed in which Harvardites would visit the men in their homes, and a twenty-four hour telephone line was established to rush help in case of emergencies. Leary realized that such support by itself would have surely decreased the recidivism rate.

him by Michael Hollingshead, a researcher who had obtained it from Sandoz to study its effects on the web-spinning of spiders. Although he was dubious of it at first because he knew that psychiatrists had been using it to induce psychosis, after he had tried it he found it to be much more powerful than psilocybin, inducing more philosophical thoughts and ego-reevaluation. Subsequently, the Harvard group replaced their psilocybin experiments with LSD research, hoping the scientific community would support their work.

Interestingly, although their ideas were rejected by psychologists and psychiatrists, they received support from other fields. "In academia radical revisions can be tolerated in a neighboring discipline" (120). Physicists and astronomers from MIT were using LSD to experience multiple realities and relativistic perspectives, as were Herman Kahn and many staff members at the Hudson Institute. The Harvard group also heard from physiologists around the country, including one who was developing a holographic theory of the brain.

After 1962, things began to heat up for Leary and his group as their experiments gained more publicity. He was investigated by a state narcotics agent and asked, "What are you doing this for?" He replied, "To expand knowledge about human nature. Find out how the brain can be changed by drugs. To help people improve their lives" (127). The agent was the first to alert Leary to the link between LSD and the CIA, when he told him that his work was being shunned by other psychologists because of their CIA connections:

> That's the way it is. These guys in Washington are good patriotic Americans, and they have to do things under the table now and then, like anyone else. They're our team against the Russkies, Timmy, and they play for keeps in that league...So I hope this word to the wise is sufficient. Why don't you give up this drug work? Let the CIA play with drugs. You've got a fine career going for you here at Harvard. You could become state superintendent of mental health - as long as you don't step on toes that you shouldn't be stepping on. If you see what I mean...There are some important people in Washington very interested in what you're doing. And they'll be watching your next moves (128).

Leary realized that there were large discrepancies in the way different generations would handle "the power and promise-threat of mind-expanding chemicals. But if I am confronted with a fifteen-year-old who does not know what he is doing and a fifty-year old who does not know what he is doing, I'll take the fifteen-year-old every time," he declared. "In using a new form of energy, whatever mistakes the teenager makes will be in the direction of sensation, love-making, curiosity, desire for growth. The fifty-year-old has abandoned sensation, lost the impulse to make love, killed his curiosity, and

dissipated his lust for growth. You know how he uses new forms of energy: for control and power and war-making" (1966, 123).

In 1962, Leary was also visited by Mary Pinchot Meyer[20], a Washington socialite who ran in powerful circles. She wanted Leary to teach her how to run an LSD session, so that she in turn could teach the women in Washington to turn on their husbands and boyfriends. Leary did not know until after her death that her husband, Cord Meyer, was a top-level CIA official. "Since drug research is of vital importance to the intelligence agencies of this country, you'll be allowed to go on with your experiments as long as you keep it quiet" she told him. You are doing

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[20]During this first visit, Mary told Leary that "this friend" of hers, who was a very important man, was impressed with what she had told him about LSD and wanted to try it himself.

She stayed in touch with Leary, reporting that top people in Washington were turning on. "You'd be amazed at the sophistication of some of our leaders," she said.

A short time later, she visited Leary and told him she was very upset because someone had told reporters about her boyfriend, and although he was married, "to say the least," not a word was printed about it. (Lee and Shlain later revealed that Mary was one of President Kennedy's girlfriends, and they smoked marijuana together in the White House.) She told Leary that this was just an example of the power plays and control occurring in Washington.

In December 1963, after JFK's assassination, Leary received a phone call from an extremely distraught Mary: "They couldn't control him any more. He was changing too fast...They've covered everything up. I gotta come see you. I'm afraid. Be careful" (194). Then the line went dead.

Leary never spoke with Mary again. She was shot and killed on October 13, 1964, less than a year after Kennedy's murder, while walking along the C&O Canal, assassination-style - twice in the head and once in the chest. A black male who had been fishing at the canal was charged with her murder; he pleaded innocent and was subsequently cleared of all charges.

She had never mentioned any names to Leary, and in his autobiography, he states what happened without making any speculations. When I recently talked with Mr. Leary, he told me that an expose reporter was currently investigating Mary's death, and had discovered that after her murder, a CIA agent had entered her house and destroyed her diary.

exploratory work the CIA tried to do in the 1950s. So they're more than happy to have you do their research for them. As long as it doesn't get out of hand"[21] (155).

Nonetheless, Leary continued his research, partly because he failed to realize the seriousness of what was happening, and partly because he firmly believed in the importance of what he and his team were doing.

In March of 1962, Leary was confronted at a faculty meeting by professors who disagreed with the way his group was conducting their research. Specifically, they felt it was irresponsible that the experiments were not supervised by a medical physician, and that Leary and the other researchers took the drugs along with the subjects. The Harvard school newspaper printed the story the following day, and it was immediately picked up by the Boston press. This prompted an investigation by the FDA, who forced Leary to hand over his supply of drugs to the university health service so that they could monitor his experiments. "These drugs apparently cause panic and temporary insanity in many officials who have not taken them" Leary quipped as he "grudgingly forked over his stash" (Lee and Shlain 1985:87).

The negative nationwide publicity which Leary's actions were receiving was apparently too much for the Harvard administration to accept. He and Richard

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[21]Lee and Shlain discovered a CIA document which instructed that "information concerning the use of this type of drug for experimental or personal reasons should be reported immediately...In addition, any information of Agency personnel involved with...Drs. ALPERT or LEARY, or with any other group engaged in this type of activity should also be reported" (Lee and Shlain 1985:85).

Alpert were terminated from their positions in 1963.

Although Leary and Alpert were no longer associated with Harvard, they were not about to cease their research. Captain Alfred M. Hubbard, a former high-level OSS officer, provided Leary's group with LSD after they could no longer obtain it from Sandoz, and eventually, the Hitchcocks invited Leary to continue his studies at their four-thousand acre mansion in Millbrook, New York.

Hubbard had independently conceived of the idea that an LSD trip could have therapeutic potential. As an experiment, he began administering it to alcoholics, "with the hope that the ensuing experience would lead to a drastic and permanent change in the way they viewed themselves and the world" (Lee and Shlain 1985:49). He found that everyone who was treated with LSD seemed to benefit, and based upon these results, he established treatment centers at three major hospitals in Canada. "His faith in the LSD revelation was such that he made it his life's mission to turn on as many men and women as possible" (Ibid., 44).

Hubbard traveled extensively throughout North America and Europe, "giving LSD to anyone who would stand still. `People heard about it, and they wanted to try it,' he explained. During the 1950s and early 1960s he turned on thousands of people from all walks of life--policemen, statesmen, captains of industry, church figures, scientists. `They all thought it was the greatest thing,' he stated. `And I never saw a psychosis in any one of these cases'" (Ibid., 51). It was from Hubbard that many researchers learned the cardinal rule of set and setting, which

stated that the LSD state was contingent on the mindset of the person taking the drug and the setting in which the experience occurred (Stevens 1987). Aaronson and Osmond (1971) define set as "the attitudes, motivations, preconceptions, and intentions that individuals bring to their experiences" (10).

Hubbard guided Aldous Huxley, author of The Doors of Perception, on his first LSD trip. Huxley had already written The Doors of Perception when he met with Hubbard, which described his first mescaline experience and how he felt it helped him understand himself and the world. The book alerted a large section of the educated public for the first time to the existence of hallucinogenics. Both Hubbard and Huxley shared "a unique appreciation of the revelatory aspect of hallucinogenic drugs" (Ibid., 49).

During the 1950s, Hubbard was apparently asked to join the CIA again, but refused. "They lied so much, cheated so much. I don't like `em...They're lousy deceivers, sons of the devils themselves...The CIA work stinks. They were misusing it. I tried to tell them how to use it, but even when they were killing people, you couldn't tell them a goddamned thing,'" he explained (Lee and Shlain 1985:52).

The first group to use LSD socially rather than clinically formed in the mid-1950s and included Hubbard, Huxley, Los Angeles psychiatrist Oscar Janiger, philosopher Alan Watts, and researchers Sidney Cohen and Arthur Chandler. Such intellectuals had different notions as to the best usage of LSD-type drugs.

Some novelists, such as Huxley conceived of the role of drugs such as LSD in utopian societies (Island), while others (e.g., Alan Watts and Walter Pahnke) described their use as educational tools and for inducing transcendental, aesthetic, or mystical experiences.

Some scientific researchers were becoming unhappy with the terms *psychotomimetic, psychosis, and hallucination*, and the negative connotations they implied. In 1957, Dr. Humphrey Osmond, who had worked with Hubbard on the research with alcoholics, introduced a new term for LSD and similar drugs to the psychiatric establishment--*psychedelic*, which means "mind-manifesting" and implies that such drugs do not produce a predictable sequence of events, but bring out whatever is latent in the unconscious. Eventually, Osmond's "terminological invention became associated with peculiar features of the American drug culture of the 1960s, including certain styles in art and music. At one time it was so politically charged that choosing the work `psychedelic' over more traditional or clinical terms meant taking sides in a cultural civil war" (Grinspoon and Bakalar 1983:12).

As psychiatrists began to use LSD more often in their treatments, it became "the talk of the town" in Hollywood and Beverly Hills. Cary Grant was a "zealous missionary" for LSD. "All my life," said Grant, "I've been searching for peace of mind. I'd explored yoga and hypnotism and made several attempts at mysticism. Nothing really seemed to give me what I wanted until this treatment" (Lee and

Shlain 1985:57). Jack Nicholson, Anais Nin, James Coburn, and Lord Buckley were others who praised the benefits of LSD, especially for its effects upon creativity, which lingered long after the drug experience had ended.

Allen Ginsberg and other beat figures[22] became acquainted with LSD, and were the first to encourage the youth of America to free themselves from convention and embrace "a psychological freedom that opened the door to chemical experimentation." Ginsberg, Neal Cassady, William Burroughs and others "linked psychedelics to a tiny groundswell of nonconformity that would grow into a mass rebellion" during the 1960s (Lee and Shlain 1985:61). William S. Burroughs, in his foreword to Timothy Leary's autobiography, writes, "Clearly, many of the social freedoms of the present-day Western World were facilitated by the introduction and widespread dissemination of these ancient mind-altering chemicals and their twentieth-century counterparts, such as LSD....It is fascinating to look back and realize what a scintillating web of social, scientific, artistic, and political connections was involved and activated by the early days of psychedelic

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[22]"Beat" was the term used to refer to those people of the 1950s who "had nothing but contempt for the strictures of a society anally fixated on success, cleanliness, and material possession. Whatever the mainstream tried to conceal, denigrate, or otherwise purge from experience, the beats flaunted. Their hunger for new sensations led them to seek transcendence through jazz, marijuana, Buddhist meditation, and the frenetic pace of the hip lifestyle" (Lee and Shlain 1985:61). Jack Kerouac, author of On the Road, the "Bible of the Beats" is one of the most well-known members of this group, as is Neal Cassady, upon whom the main character of On the Road is based. The beats had already experimented with a pharmacopeia of drugs during the 1950s. The beats can be compared to the "hippies" of the 1960s.

experimentation" (in Leary 1983:7).

In this Chapter I have discussed Timothy Leary's influence on the chemical technology of LSD, his clashes with the CIA and other authorities, and his and others' opinions about the best uses for LSD. I have shown how LSD was transformed during its innovation from an uncontroversial technology to a highly debated drug. In the next Chapter, I will further discuss the social construction of LSD, the disputes over its best uses and its legality, and its current status. I will then turn to a reflexive analysis of the usefulness of the theories of SCOT for this study.

CHAPTER FIVE: CONCLUSIONS AND REFLECTIONS ON THE USEFULNESS OF SCOT

In this Chapter, I will discuss the further innovation of LSD from a not-unusual chemical technology into a highly controversial drug, and the reasons for its increased popularity, especially among the young. I will investigate reasons for the fear of LSD and other psychedelics, anti-LSD laws, and the current status of LSD usage and research. I will then turn to solutions to the problems of pscyhedelic drugs in our society, and a reflexive analysis as to the usefulness of SCOT theories for this study.

THE PUBLIC DISCOVERS LSD

Due in large part to Leary and his group as well as the experiments of the CIA, knowledge about LSD reached the larger public, and thus youngsters. For example, Ken Kesey, notorious leader of the Merry Pranksters and vociferous proponent of LSD, was introduced to the drug when he volunteered for a federally-funded experiment at the Veterans Hospital in Menlo Park, California in 1960. Soon after being paid seventy-five dollars a day to ingest LSD and answer the questions of the researchers (who did not take the drug themselves), he obtained a position as a night attendant on the psychiatric ward, where he had access to

an array of drugs..."and somehow drugs were getting up and walking out of there and over to Perry Lane" (Wolfe 1967:41). (Perry Lane was a "collegiate bohemia" where Kesey lived with his wife while attending graduate school at Stanford University).

Soon, LSD became a part of life for Kesey and others on the West Coast. Because "travel was still attached to the bohemian lifestyle as a metaphor for spiritual discovery" (Lee and Shlain 1985:121) Kesey and his Merry Pranksters embarked on a journey across America in an old school bus painted with Day-Glo colors. Their mission, besides having the time of their lives, was to shock mainstream America with their bizarre costumes, face paints, music, and frivolity, and make those still "caught up in the game" step back and take a good look at themselves. Ken Kesey had a vision of "turning on the world, electrifying it courtesy of the most advanced products of American technology" (Gitlin 1987:207).

Among those attracted to Kesey's antics were members of the Free Speech Movement which arose on the Berkeley campus in the fall of 1964. There was great enthusiasm and optimism among student activists at this time, and young radicals "believed that challenging entrenched authority entailed a concerted attempt to alter the institutions and policy-making apparatus that had been usurped by a self-serving power elite; at the same time, they sought to lead lives that embodied the social changes they desired" (Lee and Shlain 1985:127). Using drugs was a way to rebel against the establishment, and illegal drugs became

even more intriguing to those who wanted to defy authority:

> It is impossible to understand the politics of LSD without also considering the politics of marijuana, as the two were linked within the drug subculture. The popularity of both substances was inseparable from the outlaw ethos associated with their use. Dope was an initiation into a cult of secrecy, with blinds drawn, incense burning to hide the smell, and music playing as the joint was ritualistically passed around a circle of friends. Said Michael Rossman, a veteran of the Berkeley Free Speech Movement, "When a young person took his first puff of smoke, he also drew in the psychoactive culture as a whole, the entire matrix of law and association surrounding the drug, its induction and transaction. One inhaled a certain way of dressing, talking, acting, certain attitudes. One became a youth criminal against the State" (Ibid., 129)

Not only was marijuana illegal, but once one discovered that its effects were pleasurable, the Establishment, which would only reiterate how *bad* it was, lost even more credibility:

> When you smoked marijuana, you immediately became aware of the glaring contradiction between the way you experienced reality in your own body and the official descriptions by the government and the media. That pot was not the big bugaboo that it had been cracked up to be was irrefutable evidence that the authorities either did not tell the truth or did not know what they were talking about. Its continued illegality was proof that lying and/or stupidity was a cornerstone of government policy... They saw through the great hoax, the cover story concerning not only the narcotics laws but the entire system. Smoking dope was thus an important political catalyst, for it enabled many a budding radical to begin questioning the official mythology of the

governing class (Idem.).

Carl Oglesby, former president of Students for a Democratic Society (SDS), reflected upon how the psychological meanings of taking LSD and rebelling against authority were complementary:

> The acid experience is so concrete. It draws a line right across your life--before and after LSD--in the same way that your step into radical politics drew a sharp division. People talked about that, the change you go through, how fast the change could happen on an individual level and how liberating and glorious it was. Change was seen as survival, as the strategy of health. Nothing could stand for that overall sense of going through profound changes so well as the immediate, powerful and explicit transformation that you went through when you dropped acid. In the same way, bursting through the barricades redefined you as a new person. It's not necessarily that the actual content of the LSD experience contributed to politically radical or revolutionary consciousness - it was just that the experience shared the structural characteristics of political rebellion, and resonated those changes so that the two became independent prongs of an over-arching transcending rebellion that took in the person and the State at the same time (Ibid., 132).

The decision to smoke marijuana meant the crossing of a legal border; the decision to try LSD meant the crossing of an entirely different border. For one thing, the amount of LSD taken, and the resultant effect, could not easily be controlled, because on the street, the drug was dissolved onto sugar cubes or

small tabs of paper. Once ingested, the user was along for a twelve-hour trip, with no clear idea of where s/he was going or what s/he would pass along the way. The decision to use LSD required a "leap of faith," and those who took the plunge differentiated themselves from those who did not. As wall graffiti of the sixties proclaimed, *Reality is a crutch for those who can't face acid*.

Kesey and the Merry Pranksters fostered this idea when they held their heavily-publicized Acid Tests which challenged people to take the plunge to see if they could handle it. "The willingness to endure what could be a rather harrowing ordeal was for many young men and women a way of cutting the last umbilical cord to everything the older generation had designated as safe and sanitized. If smoking marijuana turned people into social outlaws, acid led many to see themselves as cosmic fugitives" (Lee and Shlain 1985:130). Frank Barron, in 1967, stated that young people "seek a human nature that will be free of the tyranny of the machine. Their shibboleth is `the acid test'...[which] is at least in part the ability to abandon the claims of the individual ego and to participate in a sort of group mind that is beginning to `take off' and is just about ready to `go somewhere'" (Debold and Leaf 1967:15). The acid tests were the first important multi-media happenings, combining light shows, tapes, live rock bands, movie and slide projectors, strobe lights, and other technological gimmicks (O'Neill 1971).

Although LSD was not the only drug used to defy authority and question reality, it was the most widely used: "During the 1960s, when millions of young

Americans experimented with altering their minds, the most used hallucinogen was lysergic acid diethylamide - LSD. It took users on voyages in their minds to places they had never been" (Dept. of Justice, DEA 1991:1). The phenomena spread across the country; cultural diffusion took place--weekend tripping by youngsters in the cities spread to the suburbs (O'Neill 1971). Some young people who, in different times, might have become political leaders or activists, withdrew completely from the political process and "began to look for areas where individual effort and dedication would yield creative satisfaction. They turned their energies to themselves and their immediate surroundings" (Gustaitis 1969:xv). They became interested in social experiments such as communes and extended families.

The epitome of these newer values was realized in the hippie way of life,

> the latest example in a long line of bohemian life-styles. Hippies in the modern version are younger than bohemians of the past and are more visible to the general public because of television and mass circulation magazines.
>
> Aside from the distinctive clothing and well-known locations of hippies, the major characteristic of their life-style is drug use. [T]he proportion who use drugs is higher in hippie communities than in other youth groups. Hippie life is synonymous with what one author calls the `acid subculture.' The values of the style have been identified as: Anti-familial (but pro-commune), Anti-psychiatry, Anti-bureaucracy, Anti-wealth, Anti-cleanliness, Sexual freedom, Anti-rationality, Anti-violence (pro-love) (Richards and Langer 1969:11).

In 1968 in Haight-Ashbury, a major counter-cultural center, Ronald Siegel

attempted to discover why the incidence of LSD-type drug use was so high. "In answer to the question `Why use psychedelics?' the common straight answer was that they were an escape from society. But that seemed more a description of the behavior than the cause. The common answer from users themselves was that use of psychedelics was a search for meaning and individuation in life, not an escape from life" (Grinspoon and Bakalar 1983:216-7).

As Richards and Langer (1969) report, in hippie communities in 1967-8, LSD was found second only to marijuana in extent of use. In colleges and high schools, marijuana was also the most widely used drug, with amphetamines, barbiturates, LSD, and then opiates (primarily heroin) last.

They also found the general pattern for college student users of hallucinogens tended to major in the arts, humanities, or social sciences more often than other fields. Institutions with an emphasis on liberal arts tended to have high drug use; those with a professional, vocational or technical program tended to have lower rates.

As to why students began to use LSD, Richards and Langer found that "the motives for first use of LSD by college students tend to be somewhat more serious than those for marihuana use. `Interesting and worthwhile for itself' is mentioned more often than curiosity. `Insight,' `creativity,' and `understanding' are also mentioned as reasons by those who continue use of LSD (1969:19). The sensations obtained from the drug seemed to be more important for frequent

users, while the social motives and enjoyment seemed to sustain occasional users.

The media portrayal of the hippies greatly influenced teenagers of high-school age. Some ran away from home in 1967 and 1968 "to partake of experiences they had read about or seen in the media. The `teeny-boppers' and `plastic hippies,' hangers-on in hippie communities, adopted some of the style, clothing, sexual behavior, art and music preferences, and drugs, but not the essence of the hippie philosophy" (Richards and Langer 1969:12).

As the decade of the sixties drew to a close the profile of hallucinogenic users in the counter-cultural centers such as the Haight-Ashbury changed. After 1968, hippies in the Haight tended to come from somewhat lower social-economic strata than previously. Their drug of choice changed from hallucinogens to "speed" (methamphetamine). They were more aggressive and less likely to express an ideology in connection with their life style or drug habits--"[a]nd it was the ideology rather than the demography that defined the now-classic hippie life" (Richards and Langer 1969:8). There can be no doubt that young people in the 60s were excited by the ability of LSD to help them see and perceive the world in a new way. Its use helped them break their bonds with conformist society. The widespread use of LSD was destined to continue, even when legislators took action to curb it.

Several factors contributed to the growth of LSD usage in the 1960s. The

use of mind-altering drugs was not a new phenomena in America. As early as the first decades of the nineteenth century, opiate usage was becoming a great concern to physicians and perceptive members of society[23]. Some users of hashish and opiates claimed that such drugs expanded consciousness and intensified creativity (Morgan 1981). According to Fort (1968), "mind-altering drug use and abuse is best understood as a barometer of a sick and corrupt society, as a reflection of underlying social storm. Americans live in a drug-ridden society where hundreds of millions of dollars are spent each year on advertising that encourages people to use alcohol, tobacco or other drugs every time they have a pain, a problem or trouble" (14). Others also commented on the mindset of Americans towards drugs and its relationship to the widespread use of LSD:

> Within a wider context, the quest of the young for psychedelic adventures begins to look like the symptom of a much larger social development, in which their rejected elders participate. The fact is: our society is well on its way to becoming distressingly drug-dependent. The reliance on chemical agents to control the various functions of the organism is not a standard feature of what we regard as `health.' During 1967, Americans consumed some 800,000 pounds of barbiturates--and then some ten billion amphetamine tablets to counteract the barbiturates (Roszak 1968:170).

Youngsters adopted this reliance on chemicals, but not the chemicals their

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[23]See Musto (1973) and Morgan (1981) for interesting discussions on the origins of drug use and regulation in America.

elders preferred:

> To many young people, the illicit use of certain drugs is part and parcel of their culture. As bootleg liquor was to Flaming Youth, pot, acid, and the other drugs are to the Turned-on-Generation. They abjure alcohol and tobacco, using the rationale that the latter are more harmful than `their' drugs. The impression is strong, however, that alcohol and tobacco are rejected as much because of their association with an older generation as because of health hazards.
>
> The appeal of the hallucinogens and the non-medical use of prescription stimulants and sedatives is not just a fad or a substitute for panty raids and goldfish swallowing, however. New values ad culture forms that challenge older ways are to a certain extent compatible with drug-taking. The set of newer values has been characterized as the `Cult of Experience.' One of those new values is immediate pleasure, and drug-taking in the service of this interest appears to obviate the need for abstention or concern for future health. Young people use drugs illicitly for sociability, for kicks, for insight, for spirituality, or for relaxation. Hard work or frugality for the sake of future rewards (the `Puritan Ethic') is felt by some to be outdated in an age of overproduction, wide distribution in income, and pressure for consumption (Richards and Langer 1969:10).

As the decade of the 60s unfolded in domestic and foreign turmoil, psychedelic drugs seemed the solution for many Americans who felt that "a sense of wholeness, which healthy men and healthy societies have, was missing in urban America. Everything--man and his world--was fractured, compartmentalized and contradictory" (Gustaitis 1969:xiii).

Many drug users felt that, to add to the problems in America, the West as a whole lacked a concept of *sadhana*, a Sanskrit word which roughly means "the

way." "Almost every other culture has some growth discipline to guide man in his unconscious groping toward ecstasy, knowledge and meaning. But the West, without one, has been spiritually impoverished" (Gustaitis 1969:xii). Young people became consumed with curiosity for Eastern culture and practices, which they felt expressed a better understanding of the human spirit. Psychedelic drugs were often the catalysts for their spiritual curiosity, and by continuing to use such drugs, many hoped they would continue to learn about human needs and happiness by exploring their minds. "The very term `drug trip' indicated the user's desire to go somewhere else than America" (Morgan 1981:164). This was not just an American phenomenon. Time magazine reported in 1967 that "the immigration departments of Europe record a constant level over the past few years of something like ten thousand disheveled `flower children' (mostly American, British, German, and Scandinavian) migrating to the Near East and India--usually toward Katmandu (where drugs are cheap and legal)" (Quoted in Roszak 1968:33).

More practical reasons for the popularity and growth of LSD usage were its ready availability and ease of concealment. Although other hallucinogens such as peyote and mushrooms were available, they were more difficult to obtain, more expensive, and couldn't be hidden on sugar cubes or paper tabs, as LSD could.

The recreational usage of LSD greatly surprised many researchers at first, including Hofmann and even Leary. As Hofmann said: "After my first self-experiment, which had revealed LSD in its terrifying, demonic aspect, the last thing

I could have expected was that this substance could ever find application as anything approaching a pleasure drug" (1983:29). Leary, in 1962, said, "It had never occurred to us that this experience, which we treated with such deference and awe, could become a popular party item" (Quoted in 1983a:115).

Although Leary was not expecting people to begin using drugs such as LSD recreationally, he was not surprised at the interest in the substances. He believed that everyone should have access to substances that would help expand the mind; after all, it was "the fifth-freedom." As far as he and Allen Ginsberg (among others) were concerned, "psychedelic drugs held the promise of changing mankind and ushering in a new millennium and therefore no one had the right to keep them from the average citizen" (Lee and Shlain 1985:78). Leary believed that the dominant limited vision of reality which existed in the early sixties was primarily due to the dominant drugs at the time--alcohol and caffeine. "Change the drugs, and a change of heart would naturally follow: `Politics, religion, economics, social structure, are based on shared states of consciousness. The cause of social conflict is usually neurological. The cure is biochemical" (Ibid., 79). Roszak (1968) put it another way: "The `psychedelic revolution' then, comes down to the simple syllogism: change the prevailing mode of consciousness and you change the world; the use of dope *ex opere operato* changes the prevailing mode of consciousness; therefore, universalize the use of dope and you change the world" (168).

REVERSE SALIENTS

As the technological system of LSD continued to grow, and more and more groups were brought into the network, problems arose which conform to Hughes' (1987) definition of "reverse salients," which, according to Hughes, often develop during the growth of systems. "Reverse salients are the components in the system that have fallen behind or are out of phase with the others" (73). Reverse salients suggest uneven and complex change. The need for organization may often be a reverse salient. "In each stage in the growth of the system the reverse salients elicit the emergence of a sequence of appropriate types of problem solver--inventors, engineers, managers, financiers, and persons with experience in legislative and legal matters" (Hughes 1983: 14-17). The problem solvers which were elicited to aid the system of LSD had their work cut out for them.

The medical community batted over the proper scientific usage of drugs such as LSD - those who believed in the psychotomimetic idea and thought the drugs should be limited to medical and therapeutic studies degraded those, like Leary, who believed that the drugs could be used in many different ways, including on "normal" subjects. They claimed that the idea LSD could expand the mind was nonsense because such results could not be measured by objective means such as IQ tests.

In the legislative arena, proponents of LSD were unsuccessful. "When it came time to lay down their hand, the medical establishment and the media both

`mimicked' the line that for years had been secretly promoted by the CIA and the military--that hallucinogenic drugs were extremely dangerous because they drove people insane, and all this talk about creativity and personal growth was just a lot of hocus pocus. This perception of LSD governed the major policy decisions enacted by the FDA and the drug control apparatus" (Lee and Shlain 1985:70). Regulators were also deeply concerned about the growing usage of LSD by young people, "always a critical constituency in determining attitudes toward drugs" (Morgan 1981:92). As Roszak put it, "Ironically, it may not be the young who have suffered public obloquy because of their association with the psychedelics; it may be the psychedelics that have suffered because of their association with troublesome youngsters" (1968:172). "Regardless of variations and exceptions, the available figures show dramatically that the illicit drug problem [wa]s most severe among youth and that young people [we]re increasingly in trouble with the law because of drugs" (Richards and Langer 1969:17). It wasn't just that young people in general were using LSD-type drugs, it was *which* young people:

> One of the most frightening aspects of the LSD surge is that the great proportion of acid heads are not the underprivileged of the ghetto areas reaching desperately for something that will take them from squalor to happiness in one easy step. The LSD users, in the main, are supposedly intelligent young people who come from comfortable middle- and upper-class backgrounds. It is a perplexing development and one of the basic reasons the public outcry against LSD has been so vehement and sustained (Cashman 1966:3).

A kind of ideological struggle was produced between the young and their elders called the "generation gap." "It was the first time in American history that social conflict was understood to be a function of age" (O'Neill 12971:233). When the anti-LSD legislation was passed, the dissention between generations grew.

In 1962, Congress enacted regulations that required the safety and efficacy of a new drug to be proven *with respect to the condition for which it was to be marketed commercially*. This was the first time that efficacy was included as a criterion for drug evaluation, and marked a major shift in the status of drug regulation. "In 1910, an early attempt to include efficacy had failed; the Supreme Court decided at that time that therapeutic effectiveness was a matter of opinion, not fact. . . . In 1962, however, opinion had shifted, and therapeutic claims, now conceived of as being provable by scientifically trained experts, had acquired the status of fact" (Bodewitz, Buurma and de Vries 1987:252)[24]. This posed a considerable problem for those involved with LSD research because LSD did not affect any particular symptom, such as a cold or headache; especially problematic were any claims purporting that LSD could benefit those who were healthy.

Authorized distribution of LSD became tightly controlled. FDA permission was required before any researcher could receive the drug. "By designating LSD as an `experimental drug,' the FDA had in effect ruled that it could only be used

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[24]They further discuss the efficacy of drugs with regard to regulation agencies and the sociology of technology.

for research purposes and never as part of general psychiatric practice. Consequently it became nearly impossible for psychiatrists to obtain psychedelics legally. Some of the most distinguished and experienced investigators were forced to abandon their work, and the conditions that might have demonstrated LSD's therapeutic potential virtually ceased to exist" (Ibid., 91).

Many LSD researchers were quick to blame Leary and others for the tightened restrictions, and claimed that their irresponsible actions were affected by their own use of the drug. However, it was not known at the time that it was also in 1962 that LSD research ceased being a priority for the MK-ULTRA project of the CIA, who subsequently withdrew much of their financial support for research. The CIA had already learned how best to use LSD in covert operations. They considered the drug a strategic substance and a threat to national security, and were not interested in its applications to creative or therapeutic usage.

In 1965, Congress passed the Drug Abuse Control Amendments, which resulted in even more control over psychedelic research. The illicit manufacture and distribution of LSD was declared a misdemeanor. Because of adverse publicity, Sandoz ceased marketing LSD entirely in April 1966.

In 1968, the Drug Abuse Control Amendments were modified to make possession of LSD a misdemeanor and the sale of LSD a felony. The Bureau of Narcotics and Dangerous Drugs was established to enforce the new policy. In 1970, LSD was placed in the Schedule I category, classifying it as a drug of abuse

which has no proven medical value.

Interest in LSD did not diminish when legislators began to get involved, and its use increased throughout the decade: The proportion of college students reporting use of LSD in 1967 was 1% compared with 4% in 1969 - an increase of fourfold (Richards and Langer 1969). "LSD reached the height of its popularity in the late 1960s and early 1970s, so apparently its use was not much affected by the law" (Grinspoon and Bakalar 1983:22).

"When a reverse salient cannot be corrected within the context of an existing system, the problem becomes a radical one, the solution of which may bring a new and competing system" (Hughes 1987:75). These new systems were comprised of other LSD-type drugs which were not yet covered by the laws. The first new psychedelic to surface was DMT, dimethyltryptamine, introduced into the Los Angeles scene by Oscar Janiger. DMT lasted thirty minutes and made LSD seem like "a lazy summer picnic" (Stevens 1987:72).

Other drugs which were developed and said to produce effects similar to those obtained from LSD included Ecstasy, Adam, Intellex, 2CB, Vitamin K, and "a handful of others, most synthesized from various methoamphetamines and tryptomines" (Stevens 1987:359). Stevens, made aware of such drugs while doing research for his book about LSD, began to wonder where these other drugs were coming from:

> What I discovered was that the neuro-consciousness game, as currently constituted, wouldn't exist if it weren't for a small number of neurochemists who have dedicated their spare time to exploring the molecular implications of the psychedelic family of drugs.
>
> `I have sort of a team and we work together,' was the way one of these chemists explained it to me. `We'll sit down and maybe someone will suggest matching this molecule with that one. Out come the paper and pencils and we scratch away for a few hours until we figure out how to put it together. Then it's into the lab to synthesize it...' (Stevens 1987:366).

In the late 1980s, the Drug Enforcement Agency sought to curb the activities of these innovative chemists. They proposed to make it illegal to manufacture any substance with a molecular similarity to any of the currently scheduled drugs. Additionally, they proposed that it be required that researchers conducting private research in this area clear their activities with the Food and Drug Administration.

CONSOLIDATION

So began the phase of consolidation of the LSD system. Hughes (1983, 1987) does not have much to say about consolidation, other than the fact that during consolidation of a technological system, actors, "especially those with political influence" often work to solve the critical problems associated with the system's growth (1987:57). Within the LSD system, consolidation occurred when the actor network components of the system formed a united front to lobby for the

reform of the laws against use, and prohibitions against research, of LSD. It was during this phase of the development of the technological system of LSD that actors within the system put aside their differences to join forces. Consolidation with other actor networks from other systems which were once competitors of the LSD system also took place, with the uniting factor being desire for reform of harsh prohibitory laws.

A major concern to many involved in the LSD system was the negative impact that the illegalization of the drug was having on research. According to figures presented at a 1967 seminar at Wesleyan University, in 1964 there were about seventy licensed investigators; in 1965 there were thirty-nine; in 1966, thirty-one; and in 1967, only *sixteen*. Federal funding markedly decreased as well. "[E]xtremely severe governmental restrictions were imposed on the distribution and use of LSD even for medicinal and scientific purposes, restrictions that interrupted nearly all investigations with this agent" (Hofmann 1983:29). It was not until recently that the Food and Drug Administration approved a study into the use of LSD-assisted psychotherapy in the treatment of substance abuse, and, as of 1993, the other necessary approvals for the study had not been obtained (Doblin 1993:70).

Those who did not favor strict governmental control over the drug had either scientific reasons: "There have been far-reaching effects in all kinds of research, especially in biochemistry, pharmacology, psychiatry, psychology, sociology,

philosophy and religion; in spite of the dangers that are certainly potential in the use of this powerful tool, it has always been man's destiny to push ahead in order to increase his knowledge" (Hofmann 1983:82-3); or moral ones: Leary and others strongly believed that "Thou Shalt Not Prevent thy fellow man from Altering his own Consciousness" (1966, 130); "individualism has always been a prominent American value, even though today's version that everyone should `do his own thing' appears as an extreme version. The freedom to take drugs, for whatever personal reason, is compatible with this philosophy" (Richards and Langer 1969:10).

Some scientists believed that education rather than suppression would seem a more effective solution to control LSD, and that the importance for more research as to the nature of its chemical action, "how it produces its remarkable psychic changes, the incidence of side effects, the issue of neurotoxicity, its psychotherapeutic potential" (Cohen 1968:42-3), and other unknown facts about many aspects of such drugs necessitated immediate deregulation. They called for more knowledge about the drug's biological and psychological mechanisms of action, its therapeutic possibilities, its dangers, and its long-term effects.

During the 1966 seminar at Wesleyan, Frank Barron stated that "at least part of the meaning of LSD today is this: that chemical technology has made available to millions the experience of transcendence of the individual ego, which a century ago was available only to the disciplined mystic" (Debold and Leaf

1967:9). He suggested that the proper course to control LSD usage, to prevent, for example, suicidal or psychotic persons from experimenting with it, would be to define unwanted *behaviors* associated with LSD and to impose legal sanctions against those behaviors.

One member of the audience at the seminar raised a very intriguing question which was never directly addressed:

> I think it's probably more truthful [rather than to regard LSD as a dangerous drug] to regard the question of the use of LSD as something of a cultural problem. We can't move culture back to something that so many persons seem to demonstrate is no longer viable for them. You cannot go back to what has become demonstrably more and more unacceptable. I was wondering if we should seriously consider strengthening the kind of institution that the members of our culture are choosing to abandon in larger numbers? (Debold and Leaf 1967:56).

In 1983, Grinspoon and Bakalar published an edited book about psychedelics because they had discovered, while doing a survey of literature on psychedelic drugs, that "they have had a greater permanent influence than is usually acknowledged on the lives of some of their users and on society in general...it has sometimes changed the direction of an individual life completely, and it may have changed the direction of our society as well" (14-5). They appealed for research in the area to begin again:

> [O]ur understanding of these most complex and fascinating of drugs remains incomplete, and they represent unfinished

> business for psychological research and psychotherapy. We may be avoiding this unfinished business by ignoring what has already been done, as forgetting classically follows repression; we need to be reminded where psychedelic drugs have taken us - as a culture, in science, in psychiatry - and where we abandoned the journey. This topic has been difficult to discuss because it is entangled with the general problem of drug abuse and the special cultural conflict of the late 1960s and early 1970s. So, after receiving too much attention of the wrong kind for a few years, psychedelic drugs are now almost entirely neglected. The neglect is partly produced by a fear which may be dispelled if we hold up psychedelic experience to the light of what has been learned and then forgotten or repressed (11).

Some researchers looked to other cultures for guidance as to how to best control these drugs. For example, in the Mexican Indian tribes, drugs such as LSD,

> remain in the hands of the *curandero* or *curandera*, the wise man or wise woman, the priest-doctor of the Indians. This attitude should also be ours; it would allow governmental restrictions to be loosened and make LSD available to the priest-doctors of our society, the psychiatrists. Under their supervision it would be possible to continue to explore the full potentials of this unique agent. As long as this fails to happen, LSD will remain my problem child (Hofmann 1983:30).

Some people realized that the desire to use such technologies would not wane no matter what legislative actions were taken:

> Something in the nature of our society and of the drug trip itself tends to make us fall into attitudes of worshipful awe or

> frightened contempt when thinking about psychedelic drugs. It is as though they had to be either absolutely central or beyond the periphery of normal human experience. But in primitive shamanism that is not what happens; instead, at least ideally, `the otherwise unfettered power of the world beyond human society is harnessed purposefully and applied to minster to the needs of the community.' That is just what technology, including drug technology, is supposed to do in our society. We should find a modest role for psychedelic drugs, not deifying or demonizing or ignoring them, and distinguishing rational from irrational fears. The metaphysical hunger that provides one reason for the interest in these drugs is a permanent human condition, not an aberration that is created by the drugs nor one that can be eliminated by suppressing them (Grinspoon and Bakalar 1983:258-9).

As the mania over psychedelic drug usage died down, and the media found other "hot" topics, some began to reconsider their previous attitudes about such drugs:

> It didn't make sense. Their speech was clear, their thoughts logical, and their ideas and descriptions coherent. We were fellow graduate students in a Stanford seminar on the human potential. They were describing their first LSD trip, taken the previous Saturday. And it didn't make sense--to me--then. Like almost everyone else in the late 1960s, I had learned that LSD was a dangerous, mind-altering drug, one that sensible people didn't take; but they seemed sensible both before and after. I had learned that LSD alienated people and ruined relationships; but this young, married, graduate-student couple had shared a deep and meaningful experience that brought them closer together. They talked of increased love for each other and for humanity. I had learned that LSD makes people suicidal, jumping out of high windows and that sort of thing; yet they seemed well-grounded and down to earth. I had learned that LSD makes people hysterical and psychotic; but they seemed relaxed, rational, and reality-oriented. I learned that LSD puts one into a nightmarish hell, full of terrifying hallucinations and

> Goyaesque agonies; they described a feeling of overwhelming awe for the beauty surrounding them. They said things felt `more sacred, more intense, and indescribably wonder-filled.' I had learned that LSD drives one mad, yet they seemed saner than ever. I had learned that LSD was an escape into unreality; yet their lives seemed to be enriched somehow. A few others in the class nodded understandingly, and exchanged words and smiles of warm recognition--even a sort of congratulation! This didn't make sense. We weren't a class of long-haired freaks. We were hard-working, high-achieving, graduate students from engineering, the social sciences, humanities, and assorted professional schools. This didn't make sense at all.
>
> It does now. LSD helps people experience all these things, good and bad, and many more. Like most people in the late 1960s and early 1970s, I `learned' about LSD from TV, newspapers, and magazines. I `learned' that doctors, psychiatrists, and psychologists were treating many patients who were suffering from `LSD psychosis.' I `learned' that LSD was responsible for changes in social mores, sexual openness, political activism, and a whole cultural shift.
>
> Since then, however, through my own experiences with psychedelics and subsequent readings stimulated by those experiences, I've learned that its easier to learn an erroneous opinion than to correct it...
>
> Some of the experiences one commonly has during psychedelic sessions run directly contrary to the dominant intellectual positions of the 1960s, which assumed that any deviation from our ordinary state of consciousness, especially a mystical state, is error or sickness. Today's sciences and psychologies are accommodating additional views, but in the sixties and early seventies such positions were intellectually heretical (Grinspoon and Bakalar 1983:234-5).

Others tried to determine what had happened to cause such an uproar and a panic over LSD:

> With hindsight, it is clear enough what went wrong.

> Both Huxley and Watts drew the analogy between the drug experience and such exploratory devices as the microscope. Accordingly, the hallucinogens were to function as a lens through which the shadowy layers of consciousness could be studied. But a microscope in the hands of a child or the laboratory janitor becomes a toy that produces nothing but a kind of barbarous and superficial fascination. Perhaps the drug experience bears significant fruit when rooted in the soil of a mature and cultivated mind. But the experience has, all of a sudden, been laid hold of by a generation of youngsters who are pathetically a-cultural and who often bring nothing to the experience but a vacuous yearning....I think one must be prepared to take a very strong line on the matter and maintain that there are minds too small and too young for such psychic adventures--and that the failure to recognize that is the beginning of a disaster (Roszak 1968:159).

LSD IN THE NINETIES

The usage of LSD has continued until the present. A Dept. of Justice, Drug Enforcement Administration pamphlet entitled, "It Never Went Away: LSD, A Sixties Drug, Attracts Young Users in the Nineties" reports that in a 1990 National High School Senior Survey, funded by the U.S. Dept. of Health and Human Services, 8.7% of the seniors--nearly a tenth of the total sample--said they had tried LSD at least once. For 1.9%, the most recent episode had occurred in the past month. "As to why LSD users take the drug, there seems to have been a shift in motive from the Sixties to the Nineties. Many early users were consciously seeking a quasi-religious experience. Today's young users seem interested simply in getting high" (DEA 1991:5)

Although there has been a slow decline in the use of psychedelic drugs since the mid-1970s, and it remains illegal:

> even today it appears from surveys that almost as many people are experimenting with them as in the late sixties; only fewer people are trying to build a vision of the universe and a way of life on them, or suffering adverse reactions. People have apparently learned how and when to use and not to use psychedelics, and better understand their virtues, limitations, and dangers...Along with what used to be called the...counter culture or psychedelic or drug counter culture, psychedelic drug use has been assimilated by liberal industrial societies as another more or less tolerated and more or less scorned minority diversion, custom or ideology (Grinspoon and Bakalar 1983:22-3).

According to a study by the National Institute of Drug Abuse, in the 1980s, twenty-five percent of people from eighteen to twenty-six years of age had experimented with hallucinogens. There is still a counter-culture, although it is a quiet one:

> When the hippies were at the center of the public stage, so were psychedelic drugs. As the hippie movement is assimilated, losing its distinctiveness but leaving many residues in our culture, psychedelic drugs move to the periphery of public consciousness, but continue to exert a similar subtle influence (Grinspoon and Bakalar 1983:19).

REFLECTIONS

So far I have traced the history of LSD to the present, showing that it followed the pattern of technological systems which Hughes designated. I have

shown further that although LSD began as an uncontroversial chemical technology, it became socially constructed during the period of innovation, mainly by the CIA and Timothy Leary and his group. I have discussed why the drug became so popular in the 1960s and early 1970s, and the effect this popularity had on legislators. I have discussed the fate of the drug today, and why, although it failed as a technological system, illicit use of the drug remains. I have also investigated possible solutions as to how our society can understand and correct what is today considered a "drug problem."

I now will analyze how Hughes and other SCOT theorists have contributed to this study. Hughes's designation of the phases of technological systems and its correlation with the stages in the history of lysergic acid diethylamide-25 provide an interesting and unique approach to the study of a topic which can be controversial. I have shown how each phase through which Hughes described technological systems progressing can be applied to the system of LSD. I have used the notion of networks developed by Hughes, other SCOT theorists, and other Science and Technology Studies scholars such as Latour, and they have provided a framework in which to present this research. I find in interesting and encouraging that theories developed primarily for standard technological systems, such as electric power companies, can be applied so well to this study.

I already have discussed the equation of drugs with technology, and wish to add the thought that there is some irony to the classification of psychedelic

drugs as technology when one agrees with philosophers such as Roszak that Americans rely too heavily upon technology to improve their lives and satisfy their wants:

> The gadget-happy American has always been a figure of fun because of his facile assumption that there exists a technological solution to every human problem. It only took the great psychedelic crusade to perfect the absurdity by proclaiming that personal salvation and the social revolution can be packed in a capsule (1968:177).

Nevertheless, drugs such as LSD *are* a type of technology, and it is imperative that we as a society understand them in this way. By using SCOT theories, I have tried to show that drug technologies can be researched and discussed just as other technologies can. I have tried to present this study the way a study of any technological system would be presented, concentrating on the facts and omitting personal feelings. But, following the trend of reflexivity offered by Science Studies scholars, and specified by Bloor in his Strong Programme, I feel it is appropriate here to touch upon my own views. It is interesting for me to monitor the reaction I receive from other scholars after I have described the study I am doing and mention that the topic is LSD. Rather than ask theoretical questions, questions of method, or the like, many ask, "So, have you ever tried *it*?", "Are you a proponent of *it*?", etc. I have had to defend my research to professors outside of my thesis committee, who, I suppose, worried about how it

would look for a member of their department to research a "drug." These reactions sadden me. If members of the academic community, supposedly some of the most innovative and creative members of modern society, react so ignorantly to the topic of LSD, how can we expect less-educated members of the public to react?

Studies such as this, I hope, can work to diffuse some of the misinformation and apprehension about psychedelic drugs, while fostering an appreciation for the new trends in the sociology of technology. A greater understanding of such chemical tools may work to further a greater appreciation of their appropriate uses.

The theories of researchers within the Social Construction of Technology school have been extremely helpful in this study. I have used Hughes's analysis of the phases of technological systems to provide a framework for my historical discussion of LSD. I have utilized the concepts of systems and networks to provide a framework for the way in which LSD became socially constructed.

"The result of the construction of a fact is that it appears unconstructed by anyone" (Latour 1979:240). As Latour says, it is not obvious that the technology of LSD was socially constructed, that things could have happened differently, until one takes the time to learn what happened. Once one realizes that all the facts about LSD were not known at the time when legislative decisions were made, Brown's statement that "when there is underdeterminism, values can affect

choices" (1990:261) hits home.

As Hughes (1983) said, "technical problems are sometimes in essence institutional and value conflicts" (462). Such is the case with LSD. The reverse salients--the laws--which prevented the continued development of the system, were precipitated by conflicts within American society. Once these conflicts are understood and resolved, and only then, can the continued development, innovation, and growth of the technological system of LSD continue.

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Virginia Polytechnic Institute & State University, Blacksburg, VA

B.A. Liberal Arts and Sciences, December 1990
Virginia Polytechnic Institute & State University, Blacksburg, VA
Majors: English, Psychology
Minor: Communications Studies
Concentration: Exercise Science

QCA: 3.92/4.0 Summa Cum Laude

SCHOLARSHIPS AND AWARDS:
Graduate Assistantship (merit-based), January 1994-May 1995
Instructional Fee Scholarship (merit-based), August 1993-December 1994
Rhodes Scholar Nominee for Virginia Tech, 1990
Marshall Scholar Nominee for Virginia Tech, 1990
Dean's Scholarship for the College of Arts and Sciences, 1990-1991
Honor's Program Honorarium, 1990

HONOR SOCIETIES: Phi Beta Kappa, Phi Kappa Phi, Omicron Delta Kappa, Gamma Beta Phi, Golden Key National Honor Society, Sigma Tau Delta, Phi Eta Sigma, Garnet and Gold Women's Honor Society, Honor's Student, Dean's List
President's List for Notable Academic Achievement, Outstanding College Students of America, Who's Who Among Students in American Colleges and Universities

ACTIVITIES:
Secretary, Graduate Student Assembly, 1994-1995
Member, Commission on Graduate Studies and Policies, 1994-1995
Department of Recreational Sports Student Advisory Committee, Graduate Student Representative, 1994-95

Graduate Student Assembly Representative, Science and Technology Studies, 1993-1994
Virginia Tech Intellectual Properties Committee, Graduate Student Representative, 1993-1994
Aerobics Instructor, Virginia Tech, 1988-1990, 1993-1995
Student Admissions Representative, Virginia Tech, 1989-1990
Public Relations Student Society of America, (Treasurer, 1990)
Chairperson, Class of 1991 Special Events Committee, 1988-1990
1990 Homecoming Committee, Special Events Coordinator
Blacksburg Edition Public Relations Staff; Virginia Tech Union Concerts Committee; Intramural Softball; 1990 Reebok Fitness Week Coordinator; Study Abroad 1990, Virginia Tech English Department

PRESENTATION: "LSD: Opening the Black Box." Viet Nam Generation Inc. Sixties Generations Conference, Western Connecticut State University, November 1994.

PUBLICATIONS

PENDING: "LSD and the Viet Nam Generation." Drugs and Viet Nam. Winter 1995.

"LSD: Opening the Black Box." Viet Nam Generation. May 1995.

Robyn Lisa Hohauser
February 1995