

הצעת מחקר בנושא:

עלייתו ונפילתו של המחקר האקדמי של החומרים ההלוצינוגנים

בארה"ב 1950-1970

**The Rise and Fall of Academic Research of
Hallucinogens in the United States, 1950-1970**

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מחקר החומרים הלוצינוגנים (כגון LSD, פסילוציבין, מסקלין ו-DMT) שהחל להתפתח בארה"ב ב-1950 זכה במהלך אותו עשור לצמיחה מטאורית. מעל ל-500 מאמרים על חומרים בעלי השפעות הלוצינוגניות פורסמו במהלך עשור זה, שבמהלכו זכה מחקר החומרים ההלוצינוגנים לתמיכה ניכרת בכספי מחקר ומשך אליו שורה ארוכה של חוקרים מאוניברסיטאות ומכוני יוקרתיים. אלא שבחצי הראשון של שנות השישים, במקביל לתהליכי רוחב שהתרחשו בחברה ובתרבות האמריקאית, חל מפנה חד ביחס המוסדי למחקר זה. המפנה התרחש על רקע מחלוקת בין שתי קבוצות פסיכיאטרים שעסקו במחקר החומרים ההלוצינוגנים ותפסו את השפעותיהם בצורה שונה בתכלית: בעוד קבוצה אחת ראתה את הסם כמעורר פסיכוזות, תפסה אותו השנייה כסם מרחיב תודעה. עבור קבוצה אחת היה הסם מקור לתקוות מרחיקות לכת ואילו עבור השנייה היווה אותו הסם סכנה חמורה. המאבק בין שתי הקבוצות הוכרע לבסוף לטובת הקבוצה השנייה והמחקר בחומרים ההלוצינוגנים שזכה באותה תקופה לפופולריות אצל חוקרים ממגוון דיסציפלינות נתקל בקשיים חוקיים הולכים וגוברים, נעצר ולבסוף נאסר סופית ב-1970. החוקרים שעסקו בתחום נאלצו להחליף את תחום ההתמחות שלהם ורבים מהם סבלו מפגיעה בשם המקצועי.

המחקר "עלייתו ונפילתו של המחקר האקדמי של החומרים ההלוצינוגנים בארה"ב 1950-1970" בוחן את התהליכים שהובילו לאיסור על המחקר ההלוצינוגני תוך התמקדות במאבק בין שתי קבוצות חוקרים החוקרות את אותו ארטיפקט טכנולוגי אך מבינות אותו בדרכים כמעט הפוכות ומנתח את הדינמיקה שהובילה לאיסור המחקר ההלוצינוגני בעזרת כלים מתחומי לימודי מחלוקות (Controversy Studies) וה-SCOT. המחקר מבקש להראות כי התפיסות של קבוצות המחקר השונות לגבי מהות הארטיפקט הטכנולוגי ההלוצינוגני מציגות מקרה קלאסי של "גמישות פרשנית", כפי שמציע ה-SCOT, אך מראה כי מקרה המבחן של חקר הסמים ההלוצינוגנים מרחיב את המושג "גמישות פרשנית" למימדים חדשים על ידי שימוש במושג ה-Set & Settings, השאול מתחום המחקר הפסיכדלי. אבחנה זו מחוברת באבחנות נוספות מתחום לימודי המחלוקות על מנת להראות שההמחלוקת בנוגע למחקר האקדמי של חומרים ההלוצינוגנים עסקה למעשה בכמה מהערכים הבסיסיים ביותר של החברה.

Introduction

The rise and demise of psychedelic research during the 1950s and the 1960s poses a fascinating case for the study of science and technology. How did it happen that a field of research that saw rapid growth during the 1950s and the early 1960s, attracting generous research grants and brilliant researchers from prestigious universities and research institutes, was suddenly put to a halt, then banned altogether, made illegal and even taboo, to the detriment of the careers of many of the involved scientists?

The answer to this question, as I will attempt to show, is complex and involves an intricate interplay of various social, technological as well as political factors which led to the outlawing of psychedelic research. It illustrates how the path of scientific research is influenced by political struggles and societal values, as well as about the way different preconceptions about a technology often play a role in shaping its development and determining its fate.

Historical Background

The study of psychedelic compounds (primarily LSD, Mescaline, Psilocybin, DMT and Ibogaine) and their influence in the US began at the end of the 19th century, when it was carried out by pioneers such as William James and A. Mitchell Weir who both experimented with peyote (Klüver, 1966; Doblin, 2001:11). Early research efforts in the field of psychedelics remained sporadic and inconsistent until 1950 and the arrival of LSD, brought to the US by German research psychiatrist Max Rinkel.

The first paper published based on an LSD study conducted in the US appeared in 1950 (Busch & Johnson, 1950). It proposed that LSD might be useful for psychotherapy and called for further research. Meanwhile, LSD was also quick to draw the attention of the CIA, the American Central Intelligence Agency, which was at the time interested in developing and learning about chemical compounds that could prove useful in missions of espionage (Project MKULTRA, 1977). Putting great hopes in the drug's alleged ability to act as a truth serum and interrogation tool, the agency considered LSD to be of importance to its goals, and allocated considerable sums of money to advancing psychedelic research through a network of scientists and research institutes in what was called operation MKULTRA (a fact which was divulged only in later in the 1977 Project MKULTRA hearings before the US Senate). (Project MKULTRA, 1977; Human Drug Testing by the CIA, 1977).

Various research projects, advanced by a network of psychiatrists financed by the CIA, NIMH (National Institute for Mental Health) and other governmental institutes were undertaken throughout the fifties and by the end of the decade over 500 clinical papers about LSD and other psychedelic compounds have been published (Doblin, 2001:27).

The attempts to define the effects of psychedelics followed, since the beginning of psychedelic research, two parallel if not opposing approaches which depicted the effect of the drugs in entirely different terms. The difference in these lines of thought can be first and foremost observed by the different names used to try to capture the uncanny influence of these drugs.

While the first paper published about LSD described it as a “Fantasticum” (Stoll, 1947) a latter one called it a “Psychoticum” (Beker, 1949); while one group researchers commonly referred to the drugs as “psychotomimetic” (mimicking psychosis)¹ (DeShon, Rinkel & Solomon, 1952; Hoch, 1952) for another group they were “psychedelics” (mind manifesting drugs) (Harman, McKim, Mogar, Fadiman & Sotollaroff, 1966) and even more ominously, while certain researchers called them “consciousness expanding” (Leary, 1969) others tagged them “mind distorting” (Eisner, 2002). While one side described the effects of psychedelics as pathways to “collective unconsciousness” and even “cosmic levels” (Eisner, 1961) the other side described them as mere psychic “disturbances” (Deshon, Rinkel & Solomon, 1952). These differences in terminology betray different ways of understanding the impact of psychedelics and an entirely different set of hidden assumptions about their meaning and about the meaning of mental disease and even epistemology.²

For the group of researchers working within the psychotomimetics framework, the importance of the drugs lay in their proposed ability to mimic the psychotic state of mind. For researchers such as Rinkel, Hoch, DeShon, Hyde & Solomon, psychotomimetic agents held a great promise for psychiatry because they allowed a glimpse into the state

¹ A line of thought which goes back to 19th century researcher Moreau who drew relations between the hashish experience and mental illness.

² While I am using the term “psychedelics” to refer to these hallucinogenic compounds here, I do not thereby take a stand in regard the historical debate between “psychedelics” and “psychotomimetics agents”. Every possible designation used to describe these drugs (see Shannon (2002) for an extensive list of names for the hallucinogens) seems to betray a certain historical and philosophical bias regarding their essence. I am using the term “psychedelics” because in the decades which have past since end the sixties, this term has established itself to be of the common and most widely used in the modern discourse about hallucinogenic compounds.

of mind of the schizophrenic (See for example: Rinkel, Deshon, Hyde & Solomon, 1952). For the group of researchers working within the psychedelic framework, far from being mind distorting, the effects of these compounds was supposed to be mind-revealing and even “healing” (Eisner: 2002). They were considered to be an aid in psychotherapy (Eisner & Cohen, 1958; Lewis & Sloane, 1958) and conducive for the enhancement of various creative and spiritual abilities (Harman, McKim, Mogar, Fadiman & Solaroff, 1966; Leary, 2007; Pahnke, 1969).

As the fifties drew to a close the different perceptions regarding the essence of hallucinogens, and the different parties behind the different perceptions clashed at the Second International Convention on Psychedelics in 1959 (Lee & Shlain, 1987: 69). In the beginning of the sixties, as psychedelics gradually emerged out of the laboratory to become popular recreational drugs and a symbol for a burgeoning counterculture, a growing public concern arose regarding their use. As the CIA moved on to explore other super-hallucinogens and lost interest in LSD research (Doblin, 2001) – two opposing camps within the psychiatric community emerged. One criticized the research of psychedelics, claimed that “the drugs are indeed dangerous even when used under the best of precautions and conditions.” and called for the termination of research (Grinker, 1964), while the other continued to see them as the most powerful tool in the hands of psychiatry (Eisner, 2002). The debate between these two parties emerged on the pages of scientific as well as popular magazines and in conferences as the two tried to recruit allies for their viewpoint.

While psychedelic research continued expanding in the beginning of the sixties, attracting new researchers and showing considerable promise in various studies, it also faced growing challenges. Following the establishment of the FDA (Food and Drug Administration) in 1962, new regulations were made which required that the safety and efficacy of a new drug to be proven with respect to the condition for which it was to be marketed commercially. However, neither Sandoz, the original manufacturers of LSD, nor any other entity attempted to present evidence which would prove that psychedelics had been demonstrated safe and effective for the treatment of any clinical indication (Doblin, 2001: 35). Psychedelic drugs thus fell into the category of experimental drugs and their research faced growing difficulties and hindrances throughout the sixties. Research was put to a halt in 1965 and suffered a further blow in 1967, with the establishment of a joint committee of FDA and NIMH, the Psychotomimetic Advisory Committee (whose name betrayed its orientation). Negative public image in the media made the continuation of existing research even more difficult (Dahlberg, Mechaneck & Feldstein, 1968) and psychedelic research was finally banned altogether in 1970 by the controlled substance act enacted by the Nixon administration (Doblin, 2001).

Theoretical Background

The study of controversies has been a prolific field in STS research during the past decades (Sismondo, 2004). Various researchers have investigated scientific controversies concerning a variety of topics and fields such as nuclear waste (Tierney, 1987), occupational health regulations (Brown, 1987), parapsychology (Collins and Pinch, 1982), the electric car (Callon, 1987), water fluoridation (Martin, 1991), artificial intelligence (Guice, 1998) and the definition of the moment of death (Brante and Hallberg, 1991).

According to Nelkin (1979) controversies are a useful way to disclose the “disputes, the special interests, vital concerns, and hidden assumptions of various actors” (Nelkin, 1987:7) and teach us about the “kind of reasoning that motivates public agencies, government, officials, scientists and protest groups” (Ibid. p.7). Controversies shed light on science’s blind spots, its suppressed stories and aspects. They teach us not only about the other possibilities, the roads not taken by science, but also about the reasons for the paths in which science has evolved: be they historical contingencies, methodological considerations, or pertaining to cultural values of a society. It is only through understanding the details of such controversies that one is able to understand which research gets funded for whom and by who, what research is pursued where and by whom, which results are published where and by whom, which researchers collaborate, what academic conferences are organized by whom and hosted where, and in short the reasons for science to develop as it does.

Nelkin enumerates four sources of controversies. Three of which seem to be pertinent for the description of the psychedelic controversy. The first of which is fear of hazard, a fear which is “aggravated by the often poorly understood nature of risk” (Ibid. p. 12). This source of controversy played an obvious part in the psychedelic controversy where representatives of one side of the controversy claimed that “Considering the enormous scope of psychic responses it induces, LSD is an astonishingly safe drug” (Cohen, 1960) whereas the other side of the controversy held that “the drugs are indeed dangerous even when used under the best of precautions and conditions” (Grinker, 1964). The discussion of whether psychedelic drugs are safe to research has been one of the driving forces of the psychedelic debate.

Another type of controversy specified by Nelkin involves “questions of freedom of choice when government regulates” (Nelkin, 1987:13). “Governments impose regulations on the assumption that individual choices have social costs or that individuals may fail to make rational and enlightened choices on their own behalf. Such constraints however, may also be viewed as protection of professional privilege, as unnecessary government paternalism, or as a violation of individual rights” (Ibid.). This source of controversy is present in the psychedelic debate as well. On the one hand, US president Lyndon Johnson warned Americans in the 1968 State of Union Address of “these powders and pills which threaten our nation’s health, vitality and self-respect” (Doblin, 2001:46) and legal authorities battled the spreading psychedelic use viewing it as a menace to American youth and society; on the other hand ex-Harvard professor Timothy Leary who was forced to leave his post following his psychedelic experiments went on to present the

question of psychedelics as a question of human rights, demanding a fifth freedom, the freedom to alter one's consciousness (Lee & Shalin, 1987:161) and founding the IFIF (International Foundation for Internal Freedom) (Lee and Shlain:97).

Finally, a third kind of controversy source revolves around threats posed by science and technology to traditional values. Seen against the social turmoil caused by psychedelics in the sixties, this kind of controversy source seems to be highly relevant, as counterculture slogans such as "Turn on, Tune in, Drop out", associated with the psychedelic movement challenged traditional American values like those embodied in what is often called "the Protestant work ethic"; and where claims for instant spiritual enlightenment with the aid of chemicals raised concern among traditional religious groups (Doblin, 2001:25). Even though most researchers did not wish any relation to the popular psychedelic movement, these questions tended to trickle and influence the debate about psychedelic research.

Taking into account the social and political conflict in which psychedelics were entangled during the sixties, and in which many saw psychedelics as means for psychosis and a menace to American society and values, while many others celebrated them as means for attaining an higher state of awareness and a new social order, it seems that the psychedelic controversy could also be seen as a controversy about power and authority, about questions such as: who controls scientific knowledge and who determines the basic values of society? what is a good citizen? what is an acceptable life style? Who is to declare whether a substance is a medicine or poison, and according to what standards

(medical or spiritual? modern or traditional? And according to which tradition?). A framework to such discussions about power, authority and knowledge has been developed by Foucault (1970) who has investigated the ways government and authority construct the conceptions of the healthy, the normal and the true, as well as the marginal and the sickly. These ideas have been further elaborated in various studies on governmentality by Gordon (1991), Dean (1999) and others.

Indeed, it seems to me that in the case of psychedelics the three types of controversies discussed above all seem to touch upon the basic values of the society, a fact that became increasingly clear as the psychedelic controversy ceased to be a purely scientific controversy and became entangled with the larger cultural debate about psychedelics and society and the counterculture in the sixties. The “Risk” controversy seems to touch not only on the question of whether psychedelics are risky, but also on the question whether this risk is a risk worth taking, and the answer to that question depends on the basic values of the society regarding the potential losses and gains: what is being risked? if society and sanity are risked, is this something to be avoided at all costs, or perhaps a risk worth taking in the name of a consciousness leap, as suggested by some psychedelic pioneers and their advocates? what is to be gained? are the alleged cosmic consciousness and higher mental integration arrived at through psychedelics, real or an illusion and how are they to be weighted against potential risks? The second type of controversy, the “Freedom” controversy also touches on the most basic values and questions: Who owns consciousness? can the state ban specific states of consciousness, or tell a person how he may or may not alter his consciousness? are there sanctioned vs. unwanted states of

consciousness? and if so, who is to tell what is the sanctioned state of consciousness?

Finally, as mentioned before, traditional values also comes into the picture: the image of the ideal society is challenged by the psychedelic experience and its interpretation, and so different values come to a clash: inner exploration vs. responsible productive citizenship and sometimes even the traditional values of indigenous cultures vs. traditional Christian values or the values of modern society.

The existing body of research concerning controversies will serve in contextualizing the psychedelic controversy, and the ways in which basic values regarding society, the role of risk, freedom etc. play a role in scientific controversies. It will also be relevant to understanding the dynamics of the discourse and to analyzing its progression and outcome. Analyzing the argumentative and rhetorical means used to justify certain ideas and to refute opposing positions in scientific controversies, Sismondo (2004) enumerates five different ways used to win scientific controversies. At least three of these can be seen to be relevant for the psychedelic controversy. Among them, “Detailed critiques of observations, experiments and positions” as well “isolating one position as more scientific” (Ibid. p. 105) were an integral part of the psychedelic debate, in which various accusations were made against the “scientificness” of some of some of the psychedelic research, for example by Grinker who stated that “many psychiatrists who administered the drug to themselves, and some, who became enamored with the mystical hallucinatory state, eventually in their "mystique" became disqualified as competent investigators.” (Grinker, 1964). The opposed arguments, raised by advocates of the psychedelic framework followed similar lines. For example in the case of Osmond and Huxley who

argued that scientists who saw the LSD experience as creating psychosis were thereby actually contributing to their patients developing a psychotic state of mind, and actually responsible for the failure of their experiments (Osmond, 1966; Huxley, 1999) .

The accusation made by Osmond and Huxley pertains to another level of the psychedelic controversy. One of the fundamental concepts of psychedelic research since its inception has been the concept of “Set and Settings” which has been used by various researchers (Leary, Metzner and Alpert, 1995; Harman, McKim, Mogar, Fadman & Stollaroff, 1966; Eisner 2002; and many others). According to this concept the action of a psychedelic drug is determined to a crucial degree by the character of the person undergoing the experience and his expectations of it (set) as well as by his physical and personal surroundings during the drug experience (settings). The effect of a psychedelic drug is thus not deterministic but is contingent on set and settings. The same substance can create horrific visions as well as beatific visions, stimulate psychosis or a sense of mental and spiritual well being, stimulate mystical experiences (Leary, 2007) or aid in the performance of technical assignments (Harman & Fadiman, 1970).

Thus, some researchers such as Bunce (1978), Lee and Shalin (1987) and others have proposed that the different results obtained by different research groups were to a large extent determined by the different mind sets with which they have worked and the different methods used during their experiments. Whereas the group working within the psychotomimetic framework expected the drugs to trigger a psychotic reaction and planted such notions in the minds of their research subjects (Lee and Shlain, 1987) who,

unsurprisingly often shown psychotic reactions, the group working within the psychedelic framework proposed to their research subjects that they will be going through mind expanding experiences of revelation. Furthermore, while the psychotomimetic group conducted its experiments in sterile hospital clinics and in some cases, such as in the experiments conducted by the CIA and the American army even in distinctly hostile situations of interrogation (In many of the cases using guinea pigs who have not gave their consent to be part of the experiment) (Project MKULTRA, 1977), researchers working within the psychedelic framework often tended to use more calming environments, have experimented with various methods (music, therapeutic settings) to help subjects relax (Eisner, 2002; Harman, McKim, Mogar, Fadiman, Stollaroff, 1966; Dyck, 2009:68) and even utilized religious symbols in its attempts to achieve specific results (Leary, 2007).

Considering the ideas explored by the Social Construction of Technology school (Pinch & Bijker, 1993; Bijker, 1995; Bijker 1997; Cowan, 1985) it seems that a consideration of the psychedelic controversy cannot be thorough and comprehensive without taking into account the ways in which the results obtained by the different research groups were influenced by psychedelics unique trait of being a drug family highly malleable and vulnerable to suggestion.

SCOT writers have claimed that technological development is to a large degree determined by user groups. As shown by Bijker in his famous study of the safety bicycle's early history (Bijker, 1995) different user groups and different conceptions as to

the utility of a certain artifact play a crucial role in directing its development. Technologies it is argued by Bijker, have a certain interpretative flexibility, they can be seen (interpreted) in different ways, a fact which at times proves crucial to their reception and development. As I have tried to show elsewhere (Hartogsohn, 2008), it could be argued that LSD and psychedelics in general, are a form of suggestible technology. Highly susceptible to manipulation (or in SCOT jargon, flexible to interpretation) through set and settings, and showing a vast and variable spectrum of effects, psychedelics seem to be, at least in part, socially constructed by their user groups and user expectations in a manner similar to that shown by SCOT.³

The proposed research will draw from each of the bodies of theory described above. While following the progression of the psychedelic debate, it will draw from the methods used in controversy studies in delineating ideological fronts, interests, interested parties and political bodies and in examining the rhetorical and political means used by the different parties as well as tracing the fundamental values which are implicitly and explicitly put on the line. From SCOT it will draw by delineating different user groups and their respective assumptions, conceptions and interests, as well as by applying the concept of interpretative flexibility to the area of drug research, showing how, through the phenomenon of Set and Settings, various user groups arrive at different results and

³ It is worth noting that the case at hand is more intricate than a simple SCOT analysis would suggest. While set and settings play a great role in determining the effect of a psychedelic drug, claiming that its effect is entirely determined by them would be going too far. A process of co-production of science and society (Jasanoff, 1995) seems to be at play here. While user group expectations certainly did play a crucial role at determining the effects of psychedelics, expectations themselves did not appear out of an empty void but were to some extent shaped by the effects of the drugs on researchers, which were in some cases quite radical, as can be seen in the case of Alpert and Leary who left successful academic careers for a spiritual and political quest (Lee & Shlain, 1987; Leary 2005; Ram Dass, 1993). The degree and manner in which psychedelics and their social milieu have determined one another will thus also be a crucial part of my discussion.

interpret results differently, thereby making them confront essentially different technologies.

By combining the insights of controversy studies and SCOT theory I hope to make a contribution to both fields. Psychedelic research in the sixties tells the story of various research groups who viewed psychedelic drugs as suitable for their purposes, each developing its own perceptions of them. As the common discourse of these various research groups evolved, one of the interpretations regarding these drugs became the central one, and the one accepted by the courts, with the consequence of marginalizing and effectually erasing all other viewpoints. However, in contrast to some other controversies, this particular one can not be fully understood without integrating SCOT's insight that scientific controversies revolve around different interpretations of a technology. The way in which different interpretations of psychedelic drugs (SCOT theory) became an implicit yet crucial part in the progression and outcome of a scientific debate (Controversy studies) will thus be the crux of my discussion.

Research Aims and Expected Significance

The proposed research will seek to analyze how and why the field of psychedelic research which enjoyed tremendous growth during the fifties and early sixties came to an unexpected halt during the sixties and was subsequently made illegal.

The work has two major aims. On one level, it will attempt to describe the development of psychedelic controversy, the ways in which it emerged, developed and came to an end, portraying the major players, their involvements, interests and relations. On the second level, the proposed research will seek to explain the dynamics which led to the development of the psychedelic controversy using tools from controversy studies & SCOT theory as mentioned above.

The rise and fall of psychedelic research provides a unique test case which exemplifies what happens when a new technology makes a novel appearance at the scene. A new class of drugs suddenly appears and shortly thereafter a new discourse emerges, which attempts to interpret the new technology by answering questions such as: what are these drugs? what are their effects? how are we to understand their effects? are these good, bad or neutral?

As the discourse develops, various schools of thought emerge, each with its own radically differing explanations regarding the new technology, and each with its own institutional affiliations and interests. However, the answers to the questions stated above become all the more evasive because of various factors such as the divergent values regarding the

proper image of society and man, which make it all the more harder to decide whether these effects are to be viewed as positive ones, leading humanity towards a greater good, and in further need of exploration (views which are mirrored by superlatives such as “consciousness expanding” and “mind manifesting”), or negative effects which lead us toward cognitive and moral decay and perhaps even to the demise of western society or its collapse (views which are mirrored by monikers such as “mind distorting” or “psychotomimetics”). What makes psychedelics all the more interesting is that paradoxically, through the tricky phenomenon of “set and setting”, each group, following its own paradigm seems to arrive at different experimental results. Through the mechanism of set and settings pre-conceptions seem to re-enforce themselves thus playing furtive yet crucial role in effecting the results of experiments and thus further influencing the discourse, seeding messianic or highly-optimistic expectations in some of the psychedelic researchers while convincing other researchers about the demonic, uncontrollable effects of these drugs.

My hypothesis is that the fight over the psychedelic research was highly determined by a cultural struggle which pertains to the self-image and basic values of American society, which these drugs seemed to mirror and challenge; and that this struggle in turn, was further confused and exacerbated by the tricky nature of these drugs, as mirrored by the phenomenon of *set and settings*, which, as I have sought to show elsewhere (Hartogsohn 2008) can be examined and interpreted within the framework of SCOT theory.

Thus, the research will survey the different strains and groups within the psychedelic research of the 1950's and the 1960's. Taking into view the larger picture of hallucinogenic research, it will focus upon selected groups of researchers; show the relations, co-operations and disagreements between the different research groups while following their affiliations with various institutes such as universities, research centers, hospitals and various government agencies such as the FDA, the NIMH, the CIA and the American Army.

The various scientific, social and historical factors which will be relevant to the discussion include the ways in which set and settings have played a part in the construction of scientific results in psychedelic research; The role which the CIA and army involvement in LSD research and in establishing scientist networks influenced the development of the LSD debate; the role of hidden assumptions about normality vs. abnormality, psychosis vs. enlightenment and reality vs. hallucination have played in the framing of the debate and in its conclusion as well as the influence of the media attention and the social atmosphere of the 1960's with it's radical ideas and growing generational gap.

The research will present a contribution to the history of the psychedelic movement of the sixties. More generally, psychedelics, with their unique relation to set and settings offer a unique test case to examine the way in which a new technology which is approached by different research groups using different assumptions, is subsequently framed in a variety of ways and finally brought to closure. The research will use the psychedelic controversy

as a test case through which the methods and insights of controversy studies will be brought together with those of SCOT theory, to refine one through the other.

Literature

Insofar as the psychedelic research grew out of the psychiatric community of the 1950's and in the context of the advances in the psychopharmacology of the time and in the field of psychotherapy, the histories of these fields is highly pertinent for understanding the background to the arrival of psychedelic psychiatry and psychedelic research at large.

There exist various sources which offer extensive overviews on the history of psychiatry and psychopharmacology such as David Healy's *The Creation of Psychopharmacology* (Healey, 2002), Edward Shorter's *A History of Psychiatry: From the Era of the Asylum to the Age of Prozac* (Shorter, 1997), Mark Micale's (ed.) *Discovering the History of Psychiatry* (1997) and David Freedheim's *History of Psychotherapy* (Freedheim, 1992).

Other accounts, which approach psychiatry from the stand point of philosophy, cultural theory and culture critic such as Michel Foucault's *Madness and civilization: A History of Insanity in the Modern Era* (1965), Gary Gutting's analysis of that critic (1994) or Thomas Szasz's *The Manufacture of Madness* (1997) will also be of high value in evaluating the philosophical and cultural background to the various conceptions of psychosis and schizophrenia, which so influenced the psychedelic controversy.

A number of texts were written about the psychedelic movement of the fifties and the sixties. Martin Lee and Bruce Shlain's *Acid Dreams: The Complete Social History of LSD, the CIA, the Sixties and Beyond* (Lee & Shlain, 1987) as well Jay Steven's *Storming*

Heaven: LSD and the American Dream (Stevens, 1987) both offer a detailed description of the history of LSD and the psychedelic movement of the sixties, while allocating a sizeable part of their discussion to the description of the psychedelic research and psychedelic controversy of the time. Another monograph which recounts the psychedelic history of the 1960's is *The Harvard Psychedelic Club* (Lattin, 2010) which recounts the story of psychedelic research scene in Harvard of the early sixties. To these one might add *The consumers Union Report on Licit and Illicit Drug* (Becher, 1972) which has a few chapters on LSD therapeutic and non-therapeutic uses.

Erika Dyck's *Psychedelic Psychiatry: LSD from Clinic to Campus* (Dyck, 2008) gives the most comprehensive and well researched history of psychedelic psychiatry up to date. Dyck focuses on Canadian psychedelic psychiatric research of the 1950's and the 1960's and examines this story from the vantage point of the history of medicine. Apart from this book, she has also published a series of informative articles regarding the psychedelic research of the 1950's and 1960's, sometimes concerning specific aspects of the psychedelic research of that era such as *Treatment of Alcoholism with LSD* (Dyck, 2006), also focusing on Canadian research.

Rick Doblin's dissertation *The Regulation of the Medical Use of Psychedelics and Marijuana* (Doblin, 2001) offers a valuable source of information regarding the history of the regulation of psychedelics both for medical as well as for research purposes. Complementing it, Jill Jones' *Hep-Cats, Narcs and Pipe-Dreams: A History of America's Romance with Illegal Drugs* offers a comprehensive history of drug use and the war

against drugs, in the US, while dedicating a few chapters to the use of hallucinogenic drugs in the sixties (Jones, 1999).

Besides these, there exists a modest selection of scholarly articles about the relation between psychedelics and society in the sixties. Among those worth mentioning here: Roy F. Baumeister and Kathleen's S. Placidi's article *A social History and Analysis of the LSD Controversy's* (Baumeister & Placidi, 1983) follows the social context and causes for the prohibition of LSD while Benjamin Cornwell and Annulla Linder's article *The myth of "moral panic": an alternative account of LSD prohibition* (Cornwell & Linder, 2002) examines the role of mass media discourse in the prohibition of LSD. Richard Bunce's *Social and Political Sources of Drug Effects: The Case of Bad Trips on Psychedelics* (Bunce, 1978) establishes a link between the set and settings created by the social context of the sixties and the frequency of bad trips at the time in comparison to the 1970' s, exploring the idea of relations between historical set and settings and the nature of the psychedelic experience, which will be highly relevant to my research.

Scholarly work regarding the social history of the fifties and the sixties will also be of great importance in evaluating the relationship between psychedelic research and the political and sociological circumstances of the time. *Taking it to the Streets: A Sixties Reader* (Bloom & Breines, 2002) provides a wide variety of essays concerning the social, political and cultural aspects of the sixties; Mark Hamilton Lytle's *America's Uncivil Wars: The Sixties Era from Elvis to the Fall of Richard Nixon* (Hamilton, 2006) contains an extensive historical view of the period between 1958 to 1972, while Todd Gitlin's *The*

Sixties: Days of Hope, Days of rage (Gitlin, 1987) offers a first hand account as well as historical analysis of the sixties.

Finally, theoretical literature on controversies and SCOT theory will be of utmost importance. Nelkin's *Controversy: Politics of Technical Decisions* (Nelkin, 1992) features a wide variety of articles regarding scientific controversies. *Scientific Controversies: Philosophical and Historical Perspectives* (Machamer, Pera and Baltas, 2000) further refines and extrapolates the discussion on the issue of scientific controversies. Specific test cases in which scientific controversies were thoroughly analyzed within the context of STS include Tierney (1987) Brown (1987) Collins and Pinch (1982) Callon (1987) Martin (1991) Brante and Hallberg (1991), Guice (1998) and many other. These offer a rich variety of well thought out writings about controversies to draw from.

There also exists a rich body of literature of SCOT theory: from Pinch & Bijker's seminal essay "The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other" (1984), through Bijker's classic *Bikes, Bakelites and Bulbs: Towards a Theory of Socio-Technical Change* (1995) and on to various compilations of essays on the sociology of technology such as Bijker, Hughes and Pinch's *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (1989) and Mackenzie and Wajcman's *Social Shaping of Technology* (1999). All these offer a wide variety of discussions and test cases to draw upon.

Research Methods

The proposed research will be an analysis of a scientific controversy following similar lines to those drawn by various scholars who have investigated scientific and technological controversies (As mentioned in the *Theoretical Background* section of this document). Aspects of SCOT theory (Also mentioned in the *Theoretical Background* section of this document) will be brought into the discussion when relevant.

The research will be primarily based on textual analysis. Substantial parts of it will be based on the analysis of 1950-1970 research papers concerning psychedelic compounds. Over 2,000 papers regarding psychedelic drugs have been published in the medical literature by the end of the 1960's (Dyck, 2008:121). The research will analyze and categorize them, finally focusing on those articles written by selected groups of researchers relevant to it, in an attempt to disclose the basic ideas, concepts, interests and sources of disagreements in the psychedelic research of the time.

A number of conferences regarding psychedelic research were held during the 1950's and the 1960's, and in them the different parties of the psychedelic controversy met, exchanged ideas and also debated. The papers submitted in these conferences and the panel discussions held were in many cases published in special compilations. Following the proceedings of these conferences will also be of utmost importance for my research.

Another important source of materials regarding the psychedelic research of the time can be found in government documents from the 1960's and 1970's, among them the hearings concerning LSD which were held before the Subcommittee on Executive Reorganization of the Committee of Government Operations in the United States Senate in 1966; the hearing conducted before the Select Committee of Intelligence and the Subcommittee on Health and Scientific Research of the Committee on Human Resources in the United States Senate in 1977 concerning "Project MK-ULTRA: The CIA's Program of Research in Behavior Modification", as well as some others.

Personal correspondences as well as memoirs of psychedelic researchers should also present us with further material concerning the development of the psychedelic controversy. Many of the psychedelic researchers of the time such as Eisner (Eisner, 2002) Leary (Leary, 2007) Alpert, Metzner and Garo (Ram Dass, Metzner & Garo, 2010) have published their memoirs. Others were extensively interviewed in various sources such as the book *Higher Wisdom* (2005) which features 14 interviews with psychedelic researchers from the time. These sources will be complemented with interviews with surviving psychedelic researchers of the time.

The analysis of these materials will be made while keeping in mind the social, political and historical context of the time, as well as with the professional context of psychiatry, psychotherapy and psychopharmacology, as mentioned in the *Literature* section of thesis document.

Bibliography

Adams, J. K. "Psychosis: 'Experimental' and Real". *The Psychedelic Reader*. Ed. Timothy Leary. Ralph Metzner & Richard Alpert. New York: Citadel, 2007. 61-82.

Alexander, Franz G. *The History of Psychiatry from: An Evaluation of Psychiatric Thought from Prehistoric Times to the Present*. New York: Harper & Row, 1966.

Anthony, P.D. *The Work Ideology*. London: Routledge, 2003.

Baumeister, Roy F., and Kathleen S. Placidi. A Social History and Analysis of the LSD Controversy. *Journal of Humanistic Psychology*. 23(1983): 25-58.

Becker, A.M. On the Psychopathology of the Effect of Lysergic Acid Diethylamide. *Wien. Ztschr. Nervenheilk.* 2: 402, 1949.

Bender, Loretta, Lothar Goldschmidt & Siva Sankar "Treatment of Autistic Schizophrenic Children with LSD-25 and UML-491." *Recent Advances in Biological Psychiatry* 4(1962):170-177.

Bijker, Wiebe, Thomas P. Hughes and Trevor Pinch. Ed. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. MIT: 1989.

Bijker, Wiebe E. *On Bikes, Bakelites and Bulbs: Towards a Theory of Socio-Technical Change*. Cambridge, MA: MIT, 1995.

Bijker, Wiebe E. "Sociohistorical Technology Studies." *Handbook of Science and Technology*. Ed. Sheila Jasanoff. London: Sage, 1995. (Bijker, 1995b)

Bijker, Wiebe E. "The Social Construction of Fluorescent Lighting, or How an Artifact was Invented in its Diffusion Stage." *Shaping Technology / Building Society: Studies in*

Sociotechnical Change. Ed. Wiebe Bijker & John Law. Massachusetts: MIT, 1997. 75-104.

Brecher, E.M. and the Editors of Consumer Reports. *Licit and Illicit Drugs*. Boston: Little, Brown, 1972.

Available online at:

<http://www.druglibrary.org/Schaffer/LIBRARY/studies/cu/cumenu.htm>

Bunce, Richard. "Social and Political Sources of Drug Effects: The Case of Bad Trips on Psychedelics." Berkeley, California: Social Research Group, 1978.

Brante, Thomas & Hallberg Margareta. "Brain or Heart: The Controversy over the Concept of Death". *Social Studies of Science* 21(1991):389-413.

Brown, Michael S. "Setting Occupational Health Standards: The Vinyl Chloride Case in Controversy." *Controversy: Politics of Technical Decisions*. Ed. Dorothy Nelkin. Sage, 1992. 125-158.

Bloom, Alexander & Wini Breines. *Takin' it to the Streets: A Sixties Reader*. New York: Oxford University, 2002.

Busch, Anthony. K. & Johnson Warren. C. "LSD 25 as an Aid in Psychotherapy". (Preliminary Report of a New Drug). *Dis Nerv Syst* 11 (1950): 241-243.

Callon, Michel. "Society in the Making: The Study of Technology as a Tool for Sociological Analysis". *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Ed. Wiebe Bijker, Thomas P. Hughes & Trevor Pinch. MA: MIT, 1989. 83-105.

Cerletti, A. "The LSD Psychosis." *Chemical Concepts of Psychosis: proceedings of the Symposium on Chemical Concepts of Psychosis held at the Second International Congress of Psychiatry in Zurich, Switzerland, September 1 to 7, 1957*. Ed. Max Rinkel & Hermann C. B. Denber. New York: Mcdowell, 1958. 63-74.

Cohen, Sidney. "Lysergic Acid Diethylamide: Side Effects and Complications," *Journal of Nervous and Mental Disease*, 130 (1960): 30-40.

Collins, Harry & Trevor Pinch. *The Golem: What You Should Know About Science*. Cambridge: Cambridge University, 1998.

Cornwell Benjamin and Annulla Linders, (2002) The Myth of "Moral Panic": An Alternative Account of LSD Prohibition. *Deviant Behavior: An Interdisciplinary Journal* 23.4 (2002): 307-330.

Cowan, Ruth Schwartz. "How the Refrigerator Got Its Hum." *The Social Shaping of Technology: How the Refrigerator got its Hum*. Ed. Donald A. MacKenzie and Judy Wajcman. Philadelphia: Open University, 1985. 205-218.

Dahlberg Charles, Ruth Mechaneck and Stanley Feldstein. "LSD Research: The Impact of Lay Publicity." *American Journal of Psychiatry* 125.5 (1968): 137-141.

DeShon, Jackson H., Max Rinkel, Robert W. Hyde and Harry C. Solomon. "Experimental Schizophrenia-like Symptoms." In *American Journal of Psychiatry* 108 (1952): 572-578.

Doblin Rick. *The Regulation of the Medical Use of Psychedelics and Marijuana*. (Dissertation). 2001.

Ducnan, D.F. "Psychedelic Drugs in Correctional Treatment." *Crime & Delinquency*, Vol. 18, No. 3(1972): 291-297.

Dean, Mitchell. *Governmentality: Power and Rule in Modern Society*. London: Sage, 1999.

Dyck, Erika. *Psychedelic Psychiatry: LSD from Clinic to Campus*. Baltimore: Johns Hopkins University, 2008.

Dyck, Erika. "Hitting Highs at Rock Bottom: LSD Treatment for Alcoholism, 1950-1970." *Social History of Medicine*, 19.2 (2006): 313-29.

Edge, David. "Reinventing the Wheel." *Handbook of Science and Technology Studies*. Ed. Sheila Jasanoff. London: Sage Publications, 1995. 7-23.

Eisner, Betty G., & Cohen Sidney. "Psychotherapy with lysergic acid diethylamide." *The Journal of Nervous and Mental Disease*. 127 (1958): 528-539.

Eisner, Betty G. Personal correspondence with Humphry Osmond. 1961.

Eisner, Betty G. *Remembrances of LSD Therapy Past*. 2002.

Available at:

<http://www.maps.org/books/remembrances.html>

Fisher, Gary. "Treatment of Childhood Schizophrenia Utilizing LSD and Psilocybin." *MAPS Newsletter*, Vol 3, Summer 1997. 18-25.

Foucault, Michel. *Madness and Civilization: A History of Insanity*. New York: Random House, 1965.

Foucault, Michel. *The Order of Things: An Archeology of the Human Sciences*. New York: Random House, 1970.

Freedheim, David. *A History of Psychotherapy: A Century of Change*. Washington: American Psychological Association, 1992.

Gitlin, Todd. *The Sixties: Years of Hope, Days of Rage*. New York: Bantam, 1987.

Gordon, F.G. "LSD in the Treatment of Alcoholism." *American Journal of Psychiatry* 126 (1969): 481-487

Gordon, C. "Governmental rationality: an introduction". *The Foucault Effect: Studies in Governmentality*. Ed. Graham Burchell, Colin Gordon and Peter Miller. Chicago, IL: University of Chicago, 1991. 1-48.

Grof, Stansilav. *LSD Psychotherapy*. Sarasota, Florida: MAPS, 2001.

Grinker R. "Bootlegged ecstasy." *Journal of the American Medical Association* 187.10 (1964): 768.

Guice, Jon. "Controversy and the State: Lord ARPA and Intelligent Computing." *Social Studies of Science* 28 (1998): 103-138.

Gutting, Gary. "Michel Foucault's Phänomenologie des Krankengeisters." *Discovering the History of Psychiatry*. Ed. Mark Micale. New York: Oxford University, 1994. 331-347.

Hamilton Lytle, Mark. *America's Uncivil Wars: The Sixties Era from Elvis to the Fall of Richard Nixon*. New York: Oxford University, 2006.

Harman, Willis W. and James Fadiman. "Selective Enhancement of Specific Capacities through Psychedelic Training." *Psychedelics*. Ed. Bernard Aaronson and Humphry Osmond. New York: Anchor Books, 1970. 239-257.

Harman, Willis. W., Robert Mckim, Robert Mogar, James Fadiman, & Myron Stolaroff. "Psychedelic Agents in Creative Problem Solving: A Pilot Study." *Psychological Reports* vol. 19 (1966): 211-237.

Hartogsohn, Ido. *Suggestible Technology: The Story of LSD*. Unpublished paper. 2008.

Healy, David. *The Creation of Psychopharmacology*. Cambridge, MA: Harvard University, 2002.

Hoch, Paul H. "Comments: Experimental Psychiatry." *American Journal of Psychiatry* 111 (1955): 787-790.

Hoch, Paul H. "Remarks on LSD and Mescaline." *Journal of Nervous and Mental Disease* 125 (1957): 442-444.

Hofmann, Albert. *LSD: My Problem Child*. Sarasota, Florida: MAPS, 2005.

Huxley, Aldous. *The Doors of Perception and Heaven and Hell*. New York: HarperCollins Books, 2004.

Huxley, Aldous. *Moksha*. Paris: Park Street, 1999.

Human Drug Testing by the CIA. Hearings before the Subcommittee on Health and Scientific Research of the Committee on Human Resources, United States Senate. 1977.

Jasanoff, Sheila. "Ordering Knowledge, Ordering Society." *States of Knowledge: Co-productions of Science and the Social Order*. Ed. Sheila Jasanoff. Oxon: Routledge, 2004. 13-45.

Jones, Jill. *Hep-Cats, Narcs and Pipe-dreams: A History of America's Romance with Illegal Drugs*. Baltimore: John Hopkins University Press. 1999.

Kuhn, Thomas. *On the Structure of Scientific Revolutions*. Chicago: The University of Chicago, 1962.

Klüver Heinrich. *Mescal and Mechanisms of Hallucinations*. Chicago: University of Chicago, 1966.

Ling, Thomas and John M. Buckman. "The Treatment of Frigidity with LSD and Ritalin." *The Psychedelic Reader*. Ed. Timothy Leary, Ralph Metzner & Richard Alpert. New York: Citadel, 2007.

Lattin, John. *Harvard Psychedelic Club*. New York: Harper Collins, 2010.

Leary, Timothy. "The Effects of Consciousness-Expanding Drugs on Prisoner Rehabilitation." *Psychedelic Review* 10 (1969): 20-44.

Leary, Timothy. *High Priest*. Oakland, California: Ronin Publishing, 2005.

Leary, Timothy, Ralph Metzner & Richard Alpert. *The Psychedelic Experience*. New York: Citadel, 1995.

Leary, Timothy. "The Religious Experience: Its Production and Interpretation." In *The Psychedelic Reader*. Ed. Timothy Leary Ralph Metzner & Richard Alpert. New York: Citadel, 2007.

Lee, Martin.A., & Bruce Shlain. *Acid Dreams: The Complete Social History of LSD: The CIA, The Sixties and Beyond*. New York: Grove, 1992.

Lewis, David .J & Bruce R. Sloane. "Therapy with Lysergic Acid Diethylamide." *Journal of Clinical and Experimental Psychopathology* 19 (1958): 19-31.

Machamer, Peter., Marcelo Pera and Aristides Baltas. Ed. *Scientific Controversies: Philosophical and Historical Perspectives*. New York: Oxford University, 2000.

Mackenzie, Donald. *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*. Cambridge, MA: MIT, 1990.

Mackenzie, Donald and Judith Wajcman. Ed. *The Social Shaping of Technology*. Buckingham: Open University, 1999.

Malitz, S., B. Wilkens & H. Esecover. "A comparison of drug-Induced hallucinations with those Seen in spontaneously occurring psychoses." *Hallucinations*. Ed. L. West. New York: Grune & Stratton, 1962.

Martin, Brian. *Scientific Knowledge in Controversy: the Social Dynamics of the Fluoridation Debate*. NY: State University of New York, 1991.

McClelland, David. "Some Social Reactions to the Psilocybin Research Project." Unpublished paper prepared for the October 8, 1961 meeting. Papers of David McClelland. Harvard University Archives. Box 94.

Micale, Mark. Ed. *Discovering the History of Psychiatry*. New York: Oxford University, 1994.

Moreau, J. J. Du Hascisch et de l'aberration mentale: etudes psychologiques. Paris: Fortin Masson, 1845.

Nelkin, Dorothy. "Nuclear Power And Its Critics." *Controversy: Politics of Technical Decisions*. Ed. Dorothy Nelkin. Sage, 1992. 51-72.

Osmond, Humphry. "Chemical Concepts of Psychosis. Historical Contributions." *Chemical Concepts of Psychosis: proceedings of the Symposium on Chemical Concepts of Psychosis held at the Second International Congress of Psychiatry in Zurich, Switzerland, September 1 to 7, 1957*. Ed. Max Rinkel & Herman C.B. Denber. New York: Mcdowell, 1958. 3-26.

Osmond, Humphry. "A Review of the Clinical Effects of Psychotomimetic Agents." *LSD: The Consciousness Expanding Drug*. Ed. Harold Salomon. New York: Putnam- Berkley Medallion Books, 1966. 132-154.

Pinch, T. J., and Bijker W.E. The Social Construction of Facts and Artifacts or How The Sociology of Science and the Sociology of Technology Might Benefit Each Other. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Ed. Wiebe E. Bijker, Thomas P. Hughes & Trevor J. Pinch. Cambridge, MA: MIT Press, 1993. 17-50.

Project MK-ULTRA, The CIA's Program of Research in Behavior Modification. Joint Hearing before the Select Committee on Intelligence and the Subcommittee on Health and Scientific Research of the Committee on Human Resources, United States Senate, August 3, 1977.

Available at: <http://www.vestigialconscience.com/pdf/mkultra.pdf>

Pahnke, Walter. N. "The Psychedelic Mystical Experience in the Human Encounter with Death." *Harvard Theological Review* 62.1 (1969): 1-21.

Pinch, Trevor J. and Wiebe E. Bijker. "The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." *Social Studies of Science* 14 (August 1984): 399-441.

Reardon, Jenny. "The Human Genome Diversity Project: A Case Study in Co-production." *Social studies of science* 31(2001): 357-388.

Ram Dass. *Be Here Now*. New Mexico: Hanuman Foundation, 1993.

Ram Dass, Ralph Metzner & Gary Bravo. *Birth of a Psychedelic Culture*. New Mexico: Synergetic, 2010.

Rinkel, Max., Jackson Deshon, & Harry C. Solomon. "Mental Changes Experimentally Produced by LSD." *Psychiatric Quarterly* 26 (1952): 33-53.

Rinkel, Max., Robert W. Hyde, & Harry C. Solomon. "Experimental Psychiatry III: A Chemical Concept of Psychosis." *Diseases of Nervous System* 15(1954): 259-264.

Rinkel, Max., Robert W. Hyde & Harry C. Solomon. "Experimental Psychiatry IV: Hallucinogens: Tools in experimental psychiatry." *Diseases of Nervous Systems* 16 (1955): 229-232.

Rinkel Max & Herman C.B. Denber, Herman C. B. Eds. *Chemical Concepts of Psychosis: proceedings of the Symposium on Chemical Concepts of Psychosis held at the Second International Congress of Psychiatry in Zurich, Switzerland, September 1 to 7, 1957*. New York: Mcdowell, 1958.

Rinkel, Max. "Pharmacodynamics of LSD & Mescaline." *The Journal of Nervous and Mental Disease* 125 (3), 1957. 424-426.

The Narcotic Rehabilitation Act of 1966. Hearings before a special subcommittee of the Committee on Constitutional Rights by the Committee on the Judiciary, United States Senate January 25-27; May 12, 13, 19, 23 and 25; June 14-15; July 19, 1966.

Shannon, Bennny. *The Antipodes of the Mind: Charting the Phenomenology of the Ayahuasca Experience*. New York: Oxford University, 2002.

Shorter, Edward. *A History of Psychiatry: From the Era of the Asylum to the Age of Prozac*. NJ: John Wiley and Sons, 1997.

Sismondo, Sergio. *An Introduction to Science and Technology Studies*. Victoria (AUS): Blackwell, 2004.

Stevens, J. *Storming Heaven*. New York: Grove, 1987.

Stoll W. Lysergsäure-diethyl-amid, ein Phantastikum aus der Mutterkorngruppe. *Swiss Archives of Neurological and Psychiatry* 60 (1947): 297-323.

Szasz, Thomas. *The Manufacture of Madness: A Comparative Study of the Inquisition and the Mental Health Movement*. New York: Syracuse University, 1997.

Tierney, Susan Fallows. "The Nuclear Waste Disposal Controversy." *Controversy: Politics of Technical Decisions*. Ed. Dorothy Nelkin. Sage publications, 1992. 91-110.

Walsh, Roger & Grob S. Charles (Ed). *Higher Wisdom: Eminent Elders Explore the Continuing impact of Psychedelics*. New York: State University of New York, 2005.

Wolfe, T. (1999). *The Electric Kool-Aid Acid Test*. New York: Bantam Books, 1999.