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AN ABSTRACT OF THE THESIS OF Elizabeth Anne Anderson for the Master of Science in Psychology presented February 21, 1975.

Title: Effect of Stressful and "Neutral" Moving Images and Still Images on Dreaming.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:

Hugo Maynard, Chairperson

Cord B. Sengstake

Gerald M. Murch

A controlled presleep experience was used in an attempt to trace waking experience in dreams. Dream reports were collected in the laboratory from 12 dreamers (half men, half women; half recallers, half nonrecallers), using the electrophysiological method of Dement and Kleitman. Following a baseline night, each dreamer was awakened on three consecutive nights during every REM period (rapid eye movement and Stage 1-ascending EEG pattern). Immediately prior to sleep on Night 3, four of the dreamers viewed an emotionally arousing film, four others viewed a slide sequence

having the same content as the stressful film, and four others viewed an emotionally "neutral" film. Two independent judges, using Hall and Van de Castle's dream content analysis method and a tally system designed specifically for this study, failed to differentiate dreamers in the three groups on the basis of their dream content. Analyses of variance of dream content scores also failed to provide any evidence for differences among groups, recallers and nonrecallers, or nights. Some differences in dreaming style (e. g., total REM time, recallability) were noted. Limitations of the study and methodological problems were discussed. Posthoc analyses of dream reports with experimental situation content, dreamers' associations to their own dreams, and some clinical interpretations were included.

EFFECT OF STRESSFUL AND "NEUTRAL" MOVING
IMAGES AND STILL IMAGES ON DREAMING

by

ELIZABETH ANNE ANDERSON

A thesis submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE
in
PSYCHOLOGY

Portland State University
1975

TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

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INTRODUCTION

Literally years of each adult's life have been spent in a strange, exclusively personal world of visual, hallucinatory, dramatic experiences which are called dreams. There the "laws" of waking reality, of space, time, and logic are disregarded. No one can follow the dreamer into his or her world; everything there is produced by the dreamer for the dreamer alone. Ironically, this world has been largely hidden from its creator. In retrospect, it is as if the dreamer flies high in a plane above a cloud-covered planet where only an occasional small mountain range shows above the mists.

A rift in the clouds appeared only 20 years ago when Aserinsky and Kleitman (1953, 1955) discovered the relationship of rapid eye movements (REMs) and a low voltage brain wave pattern (EEG) to reports of dreaming by subjects sleeping in their laboratory. This particular EEG-REM configuration is now generally referred to as the REM state, the D-state, or REM period (REMP). Dement and Kleitman (1957b) found that 80% of their subjects recalled dreams when awakened from the REM state, while only 7% did so upon awakening from non-REM (NREM) sleep. Pooled results of many dream studies later showed that 83% of REM state awakenings produced

dream reports, while NREM awakenings typically resulted in reports of conceptual thinking (Dement, 1965). Early studies established that the REM state occurs four or five times during a night of normal sleep and comprises about 20% of the sleeping activity of young adults (Dement & Kleitman, 1957a).

So instead of an average of one dream a night remembered by the best of recallers in the home setting, subjects in sleep laboratories were recovering three and four dreams a night. Subsequently, thousands of dreams which would have slipped away into the mists have been held onto by their owners and reported to researchers. The report is not the dream, but as Hall (1953) remarks, until dreaming can be projected onto a screen for all to see, it is the best we have to work with.

The breakthrough by Aserinsky and Kleitman has enabled many to see more of their dream world and, although unable to show it to others, to describe what it is like there. The description, or dream report, is a function of the verbal skill of the reporter, his motivation, awareness, conscious and unconscious censoring, and biological limitations on memory (Farley, Schmuller, & Fishbach, 1971; Portnoff, Baekland, Goodenough, Karacan, & Shapiro, 1966; Wolpert, 1972).

Once the optimum physical conditions for obtaining dream reports were developed, i.e., abrupt awakenings before

the REM state has terminated (Dement & Wolpert, 1958; Shapiro, Goodenough, & Gryler, 1963), researchers found the reality of differential dream recall still very much with them. Self-reports of ability to remember "home" dreams range from recall of dreams almost every night to no memory of ever having dreamed. In a laboratory setting, self-designated nonrecallers did indeed report fewer dreams when awakened from the REM state than recallers although they had the same frequency of REM periods (Goodenough, Shapiro, Holden, & Steinschriber, 1959; Lewis, Goodenough, Shapiro, & Sleser, 1966). Antrobus, Dement, and Fisher (1964) verified that nonrecallers have the same number of REMPs but spend less total time in the REM state. Surprisingly, nonrecallers in their study produced more rapid eye movements than recallers and the investigators speculated that nonrecallers may be less acceptant of inner events, experiencing more anxiety when dreaming, and therefore repress dream time and make visual avoidance responses during dreams. Lewis et al. (1966) were not able to confirm this latter finding.

In a study of home dreams, Schonbar (1965) found high dream recall frequency associated with an "inner acceptant" lifestyle and low dream recall frequency with an "inner rejectant" lifestyle. On the basis of MMPI scales, Tart (1962) found that home dreams were recalled more frequently by those who paid more attention to internal stimuli, had greater ego

strength, and reacted to potential threat and conflict with manifest anxiety (Sensitizers), than those whose adaptive style was avoidance, denial, and repression of potential threat and conflict (Repressors). After more recent studies of home dream recall (Cohen, 1974a; Cohen & Wolfe, 1973; Hiscock & Cohen, 1973) Cohen has rejected the repression theory, proposing a model composed of interaction among salience, interference, cognitive, and motivational variables (Cohen, 1974b).

Analysis of both laboratory and home dreams have distinguished three qualitatively different types of nonrecall phenomena: (a) contentless reports of dreaming; (b) dreamless reports; and (c) reports of having been awake and thinking (e.g., Cohen, 1972; Lewis, et al., 1966). The presence of more respiratory irregularity in the REM state before contentless dream reports (Shapiro, Goodenough, Biederman, & Sleser, 1964) suggests anxiety as a component of this type of nonrecall. Witkin (1969, p. 329) reports that a pilot study (Witkin & Lewis, 1965) showed subjects had more frequent contentless dream recall after viewing an emotionally charged film than after a neutral film.

The discovery of the physiological concomitants of dreaming has provided psychologists with invaluable knowledge about when people dream. The methods developed in the laboratory for recovering a much more representative sample

of dream content should now stimulate renewed interest in how and why the dream script is written and what it has to say.

Freud (1900/1965) proposed four sources of dream content: (a) external sensory stimuli; (b) internal sensory excitations; (c) internal somatic stimuli; and (d) psychical stimuli. Under the psychical heading are day's residues, or impressions from immediately preceding waking life, which may be psychically important in themselves or unimportant but capable of arousing psychically significant memory traces during sleep. Freud believed that "in every dream it is possible to find a point of contact with the experience of the preceding day" (p. 197), and he presented numerous examples to prove his point. Interestingly, Foulkes (1966) has compared pre-REM stage 2-EEG thinking to Freud's concept of day residue. Foulkes observed that this NREM mentation, concerning routine, everyday themes from waking life, may influence the content of the following REM dream.

A psychoanalyst, Langs (1971) pointed out the ego's use of day residue to discharge and resolve unconscious fantasies, when he discussed the important relationship of reality experiences and intrapsychic life in the development of the individual:

A day residue may be a frustrating experience or one of gratification; a new trauma or one fraught with implications from the past; a source of anxiety, guilt or conflict, or the resolution of these;

and an instigator of fresh, or the recreator of past, conscious or unconscious fantasies. Imposed upon the ego or sought out by it, these realities lead to dream formation as part of the total organism's efforts to gratify, synthesize, resolve, and adapt. (p. 520)

An experimentally observed example of day residue incorporation in dreams has been the regular appearance of the laboratory situation in subjects' dream reports (e. g., Dement, Kahn, & Roffwarg, 1965; Domhoff & Kamiya, 1964b). In pilot work, this experimenter found direct references to the experimental conditions in at least one dream of the first night for all five dreamers.

Breger, Hunter, and Lane (1971) studied the effect of stressful real-life situations on the dreams of five people awaiting major surgery and six people who were each the focus subject of a psychotherapy group. Comparison of pre- and post-operative dreams in the first study, of baseline dreams with dreams after group therapy focus sessions in the second study, and with dreams of control subjects in both studies, showed that these emotionally arousing, personally relevant experiences influenced dream content along the dimensions of theme, formal qualities (e. g., anxiety, cognitive disturbance, involvement), and incorporation of elements from the stressful situation, both directly and symbolically.

A potentially stressful waking experience which lends itself to experimental control is film viewing. Three

research teams have attempted to influence dreaming by using film as a presleep experience (Foulkes, Pivik, Steadman, Spear, & Symonds, 1967; Foulkes & Rechtschaffen, 1964; Witkin, 1969; Witkin & Lewis, 1965). In the Foulkes and Rechtschaffen (1964) study, 24 adult subjects each were shown a violent and a nonviolent Western TV film on successive nights in the laboratory after a baseline night. Hostile (violent film) and heterosexual (nonviolent film) dream content and direct incorporation of elements from the two films (5%) were insignificant. The researchers reflected that their "highly sophisticated" subjects seemed to be minimally involved in the plots of both films and were often openly disdainful of the technical and aesthetic quality. However, dream reports following the violent film were longer, and more emotional, vivid, and imaginative than those following the other film. Foulkes and Rechtschaffen speculated that greater nonspecific arousal resulted from the violent film viewing.

In a similar study, Foulkes et al. (1967) showed a violent TV Western and a "neutral" documentary-type baseball film to 32 male children, ages 6 to 12, and found more violent and hostile content in dreams following the baseball film. The investigators concluded the violent film had a cathartic effect by allowing the boys to work off tensions during the viewing. An alternative interpretation offered

by Breger et al. (1971) is that the baseball film "while lacking aggressive content, might touch themes closer to the life concerns of young boys" (p. 25).

A complex investigation of individual differences in the transformation of film viewing experiences in subsequent dreams was begun as a pilot study by Witkin and Lewis in 1965 with 10 male subjects who worked at night and could sleep during the day in the laboratory. Continued as a main study in collaboration with Goodenough, Shapiro, Koulack, and others (Witkin, 1969), and using 28 subjects, this project is still in the process of data analysis. Subjects were selected according to extremes on the dimension of psychological differentiation, e. g., limitedly differentiated subjects are field dependent, have a global body concept, and rely on external sources for self-definition. Preliminary findings indicate that highly differentiated subjects recall more of their dreams, and have more imaginative dreams, less contentless dream reports after anxiety-arousing presleep events, more active participation of self in dreams, and fewer dreams openly concerned with the lab situation and the experimenter, than limitedly differentiated subjects. Presleep events were two emotionally charged films (an explicit medical film of the birth of a baby and a documentary of an aboriginal subincision initiation rite) and two neutral travelogue films, shown to each subject one week

apart, following a baseline night, over a period of five weeks.

A film viewing experience provides day residue for use by the dreamer. Additionally, film seems to be an ideal vehicle to carry day residue into dreams. With its flow of luminous images in the dark, the film entrances the viewer into another state of consciousness somewhere between waking and dreaming. It is a world which seems real, where the spectator is both directed toward the object and toward the inner self of associations, wish-fulfillment reveries, and emotions.

Kracauer (1960) said of the film viewer,

He is wavering between self-absorption and self-abandonment. Together the two intertwined dream processes constitute a veritable stream of consciousness whose contents--cataracts of indistinct fantasies and inchoate thoughts--still bear the imprint of bodily sensations from which they issue. This stream of consciousness in a measure parallels the "flow of life," one of the main concerns of the medium. Consequently, films featuring that flow are most likely to initiate both movements of dreaming. (p. 166)

The techniques of film editing are much like those used by the creator of the dream--the warping of space and time, unexpected transformations and juxtapositions of objects and characters, focusing of attention by closeups, abrupt disappearances, repetition of sequences, sudden changes of vantage point, slow motion, and the dissolving of one scene into another. Münsterberg (1916), who did a psychological

study of the then new medium of film, was fascinated by these techniques which "obey the laws of the mind rather than those of the outer world" (p. 41).

The film director, Buñuel, feels that the screen is the superior way of expressing the world of dreams, emotions, and instincts. The cinema seems to have been invented for the expression of the subconscious, so profoundly is it rooted in poetry. (1969, pp. 175-176)

Since the nature of film has the potential of depicting and inducing a dreamlike state, this investigator proposes that a film about a traumatic dream, filled with symbols and actions eliciting all the bodily sensations of emotional response from the spectator (Kaiser & Roessler, 1970; Münsterberg, 1916, p. 53), would be a short distance indeed from the viewer's own nightly dramas, which often carry common elements and themes from one dream to the next (Dement & Wolpert, 1958).

The purpose of this study is to investigate the influence of an experimentally controlled presleep experience on dreaming and to evaluate two determinants of that experience for possible differential effect. The presleep stimuli will be: (a) moving images with emotion-provoking content, specifically, a film about a dream; (b) still images with the same content as the dream film; and (c) moving images with different content from the dream film, as "neutral" emotionally as possible. The major questions

being asked are whether or not the two films and the slide sequence will influence dreams stylistically, affectively, and in content, and whether or not movement and/or content are determinants of the effect. No effort will be made to compare effects of the still images separately with effects of the "neutral" film.

Six hypotheses being tested are:

1. The dream film and the slide sequence will have a differential effect upon dreams. Dreams of subjects viewing the dream film and slide sequence will differ from those of subjects viewing the "neutral" film.

2. The dream film and slide sequence will have a differential effect upon the dreams of recallers and non-recallers. Dreams of recallers and nonrecallers in these two groups will differ, respectively, from those of recallers and nonrecallers in the "neutral" film group.

3. There will be more contentless reports of dreaming for subjects seeing the dream film or slides on the night of viewing than on the nights before or after (Cohen, 1972; Shapiro et al., 1964; Witkin, 1969).

4. There will be direct and symbolic incorporation of elements of both films and the slide sequence in dreams of the night of their viewing, dependent upon the emotional arousal of the subject in response to the stimulus.

5. Dream reports on the night of the dream film or slide sequence viewing will be longer, more vivid, more

emotional, and more imaginative than dream reports of the night before and the night after, for the same subject (Foulkes & Rechtschaffen, 1964).

6. There will be some carryover of the effect of the presleep stimuli to the dreams of the night following exposure to the stimuli (Witkin, 1969, p. 291).

METHOD

Subjects

Subjects (hereafter referred to as dreamers) were 12 unpaid volunteers, six men and six women, recruited from the experimenter's friends (2), casual acquaintances (8), and an ad in the university student newspaper (2). All had some college education. Dreamers were selected according to their self-reports of ability to recall home dreams. Six dreamers were chosen who recalled the content of a dream at least twice a week (Recallers) and six dreamers who did not recall the content of a dream more often than once a month (Nonrecallers). One Nonrecaller did not remember more than three or four dreams a year. As dreamers volunteered over a six-month period, they were randomly assigned to one of three groups: Group I (Dream Film); Group II (Slide Sequence); and Group III (Neutral Film), with two Recallers and two Nonrecallers in each group.

Assignment to groups was unequally divided by sex due to difficulty in finding enough male Recallers. Thus, Group I Recallers were two women and Group II Nonrecallers two men, while all other Group-Recaller-Nonrecaller combinations were composed of one man and one woman each. Sex was not an independent variable under investigation and this

distribution of sexes was considered adequate for the experimental design. However, since Hall and Van de Castle (1966) have found sex differences in frequencies of several dream content variables, those variables showing significant differences between Recallers and Nonrecallers in this study were submitted to further analysis.

There was no significant difference in age of dreamers for Groups, RNRs, Group X RNR interaction, or sex (see Table I).

TABLE I
AGES OF DREAMERS BY EXPERIMENTAL CATEGORIES AND SEX

Dreamers	Mean Age (years)	Range of Ages (years)
Group I	27.25	20-36
Group II	25.50	19-34
Group III	27.25	17-48
Recallers	26.50	19-36
Nonrecallers	26.83	17-48
Women	29.67	19-48
Men	23.67	17-34

Note. Means for Group-RNR combinations were between 22.00 and 26.50, except for Group I-Rs and Group III-NRs, with means of 31.00 and 32.50, respectively.

Procedure

The dream laboratory consisted of two adjacent rooms. The sleeping room contained a bed, a long narrow table, two chairs, a microphone on a floor stand, a ceiling speaker, and a terminal box to which electrode leads were connected, from which cables led to a wall plugboard. Above the plugboard was a large one-way window covered by drapes. On the other side of the wall was the recording laboratory, with a corresponding wallplate from which cables led to a four-channel E & M physiograph (Model 4-A). Sound equipment for communication between experimenter and dreamer, and a tape recorder were also in the second room.

Each dreamer slept in the lab for four consecutive nights. Physiological measures of brain wave activity (EEG-bipolar frontal), eye movements (EOG), galvanic skin response (GSR), and respiration were simultaneously taken and continuously monitored throughout the four nights by the experimenter.¹

The dreamer was alone in the sleeping room after electrode placement, lights out, and the initial "goodnight" at 11 p.m. until the experimenter awakened the dreamer for the last time eight hours later. The dreamer was awakened on

¹A physiological record was not obtained for Dreamer 3 (Group I-NR) on Night 1 due to machine failure shortly after the dreamer fell asleep.

Nights 2, 3, and 4 for reports of dream content when an ascending stage 1 EEG sleep pattern coincided with rapid eye movement periods (REMPs), according to the procedure developed by Dement and Kleitman (1957). The dreamer was awakened on a schedule modified from one used by Breger et al. (1971) as follows:

1. First awakening--7 minutes after REM state begins, or immediately following the first large body movement after 5 minutes of REM.
2. Second awakening--16 minutes after REM state begins, or immediately following the first large body movement after 12 minutes of REM.
3. Third awakening--22 minutes after REM state begins, or immediately following the first large body movement after 16 minutes of REM.
4. Fourth awakening--26 minutes after REM state begins, or immediately following the first large body movement after 18 minutes of REM.
5. Fifth awakening--32 minutes after REM state begins, or immediately following the first large body movement after 22 minutes of REM.
6. Sixth awakening--same as fifth.

Difficulties encountered in applying this awakening schedule to the idiosyncratic sleep and dream state patterns for individual dreamers are discussed later.

Night 1. Upon arrival at the lab, the dreamer prepared for bed and then filled out a Sentence Completion form (see Appendix A) adapted from the Incomplete Sentences Blank (ISB) College Form (Rotter & Rafferty, 1950). This was to provide personality information for use in assessing the

personal context of dreams in later analysis. An oral summary of the dreamer's activities and emotions of that day (Day Report) was informally elicited by the experimenter during electrode placement. Then the dreamer was left alone to sleep for eight hours without being awakened. Night 1 served as an adaptation night, to habituate the dreamer to the electrodes and sleeping in the lab, and for baseline information on the physiological measures. Any dreams of Night 1 spontaneously reported by the dreamer were tape recorded.

Night 2. After preparing for bed, the dreamer was asked to give a Day Report which was tape recorded, with the dreamer and experimenter in adjacent rooms communicating via intercom. During placement of electrodes, the dreamer was instructed about categories to include in any dream reports, e. g., description of surroundings, other people, emotions. During Night 2 the dreamer was awakened abruptly during REMPs, according to the previously outlined schedule, by the experimenter calling her or his name over the intercom. The experimenter then asked, "Tell me what was going through your mind before I woke you," and the dreamer's responses were tape recorded. For some dreamers the prior instruction in dream reporting eliminated the need for much prompting by the experimenter during the actual report. Frequently, however, when the dreamer was

drowsy or unclear, the experimenter asked, "Do you remember more about that?" or "Is there anything else?" or mentioned dream report categories or asked specific questions for clarification.

Night 3. The dreamer prepared for bed, gave his or her Day Report, and was attached to the electrodes as on Night 2. Then Form 1 of Nowlis' (1965) Mood Adjective Check List (MACL) was filled out by the dreamer, physiological monitoring was begun, and according to the group the dreamer was assigned to, either the Dream Film, Slide Sequence, or Neutral Film was shown. Immediately following viewing, Form 2 of the MACL was filled out by the dreamer to assess mood change induced by the film or slides.

Forms 1 and 2 of the MACL were identical except for the adjectives being arranged in different random order. The MACL consists of 49 adjectives describing mood, which are hypothesized as belonging to 12 independent factors: Aggression; Anxiety; Skepticism; Surgency; Elation; Vigor; Fatigue; Concentration; Social Affection; Nonchalance; Sadness; and Egotism (Nowlis, 1965, pp. 352-390). The only alteration in Nowlis' original checklist was the change of "clutched up" under Factor B, Anxiety, to "uptight." The dreamer was asked to check each adjective on the basis of "how you feel right now," according to four options, Definitely, Somewhat, Hardly, or Not At All.

Under all three conditions, the presleep stimulus was projected upon a screen set up at the foot of the bed, with the projection equipment and the experimenter in the darkened sleeping room with the dreamer. Projected dimensions of the stimulus were 46 x 64 cm, and stimulus length was 12 minutes, 42.5 seconds for the Dream Film and Slide Sequence, and 12 minutes, 30 seconds for the Neutral Film.

After presentation of the stimulus and administration of Form 2 of the MACL, the dreamer was allowed to go to sleep and was awakened for dream reports as on Night 2. Eight hours later, the dreamer was awakened and asked to give a short summary of the plot, setting, characters, interaction, and his or her own emotional response to the presleep stimulus viewed eight hours previously. The Film/Slide Inquiry followed the dreamer's dream reports of Night 3 to minimize the effect on dreams of any particular emphasis of film or slide content that might occur during the Inquiry. The dreamer's memory of the stimulus event and the importance, meaning, and emotions which the dreamer attached to the theme and symbolic elements of the event were ascertained by the Inquiry, which also provided material for comparison with dream content of Nights 3 and 4.

Night 4. Similar in all respects to Night 2, except that there were no dream report instructions.

Post-dream session. According to Witkin and Lewis (1965) relevant associative material has been gathered from

dreamers as long as six months after the dream occurred. In this study, the dreamer returned to the lab for an associative inquiry session anywhere from one to six weeks after the four dream nights. The experimenter read unedited transcripts of each of the dreamer's dream reports of the four nights to the dreamer. The meaning and personal context of the dream for the dreamer were elicited following each dream report reading, by the free association method after Jung (1964). Spontaneous reports by the dreamer of direct or symbolic incorporation of elements from the presleep stimulus of Night 3 and/or any other day residues were noted. The dreamer also rated each dream for involvement, vividness, implausibility, and affective polarity on a 5-point scale (see Appendix B) derived from scales developed by Breger et al. (1971) and Foulkes and Rechtschaffen (1964).

Dream Film: Group I

An avant-garde, black-and-white, 16mm film, Meshes of the Afternoon, made in 1943 by Maya Deren, was used.² There was no dialogue. The soundtrack consisted of music of a Japanese nature, with string, wind, and percussive instruments and eerie, human chant-like humming, punctuated by long

²Distributed by Cinema 16 Film Library, 80 University Place, New York City, N. Y. 10003.

moments of silence. The first 36 seconds of the soundtrack were eliminated since it served as background to the film title and credits which were not shown to the dreamer. Projection time from the first visual image of the film proper to the end of the film was 12 minutes, 42.5 seconds.

Characteristics of Meshes of the Afternoon were particularly suited for the experimental objectives. According to Kracauer (1960), black-and-white images tend to increase the realistic effect, in contradistinction to color. The small screen ratio provides an atmosphere of intimacy. Music, in addition to providing sound which normally accompanies waking environments, gives continuity and stimulates the listener viscerally; "surprisingly, this effect is intensified when in moments of extreme suspense music suddenly stops" (Kracauer, 1960, p. 135). Music without any dialogue can be expected to engage the spectator emotionally throughout the film, without the intellectual interludes provided by conversation.

Meshes is a simply stated, highly visual, suspenseful story of a young woman, her dream, and the frightful consequences. The spectator is uncertain where the dream begins and where it ends. Film techniques are used effectively to simulate a dream experience: (a) symbolic elements such as a poppy, a bread knife, and a key appear in mysterious places and are changed abruptly into other symbolic objects;

(b) a phonograph is shown always playing a record even though it has been turned off several times; (c) a telephone receiver is off the hook although it has been replaced; (d) action sequences are strangely repeated but become increasingly bizarre; (e) multiple images of the woman appear so there are often two or three of her selves in the scene; (f) actions performed by one character are repeated by the other two characters; (g) space and time are distorted in ways other than those we have come to accept in films; (h) an ominous blackrobed figure with a mirror for a face constantly eludes the young woman though she runs after it, while it walks away in slow motion; and (i) the young woman seemingly falls out a window, but then is seen clutching frantically at the walls and ceiling of a stairway inside the house.

The final scenes of the film show one of the young woman's dream selves who has been chosen as the "assassin," threatening to cut the throat of her sleeping self with a bread knife. At this point she seemingly awakes and sees instead her lover whom she follows upstairs to bed. A poppy he has brought changes into the bread knife which she hurls at his face. The scene changes to shards of glass falling upon a beach where they are covered by the incoming surf. Her lover comes to the house and enters to find the young woman in the chair where she had previously been

sleeping, soaked in blood with her throat cut.

Slide Sequence: Group II

The Slide Sequence consisted of 255 black-and-white, 35mm slides made from individual frames of the previously described film, Meshes of the Afternoon, synchronized with the same soundtrack (see Appendix C for synchronization details). Those frames were selected which would represent the action, story line, and visual elements of the film, such as symbols, as accurately and proportionately as possible. The variables of space, time, and sound were essentially held constant for the Slide Sequence and Meshes. The only variable being manipulated was movement of the image. It was felt that the .6 seconds of black screen between slides would be accepted and ignored by viewers familiar with slide shows. (Actually, the Meshes film contained more than twice as much black screen as the Slide Sequence, since any film projected at a standard speed of 24 frames per second with the shutter closed between frames, has more black screen than lighted image.)

Neutral Film: Group III

Although the point was made that any film is potentially capable of arousing emotion, an effort was made to find moving images that were emotionally "neutral" and basically different in content from the Meshes film and

slides. A black-and-white, 16mm film, Erosion: Leveling the Land, from the EBF-AGI Earth Science Series 1964, was chosen as the "neutral" treatment. Running time without title and credits was 12 minutes, 30 seconds. Ordinarily presented to college freshman geology classes, the film contains many examples in nature of erosion and leveling by rain, freezing and thawing, floods, and gravity. Weathered tombstones are depicted near the beginning of the film. A snow avalanche, storms, raging streams, cracked mud flats, and the after effects of landslides are shown. The only view of humans occur in lab scenes of artificially speeded up effects of rain and freezing, in which hands appear and for a brief moment the experimenter from the waist up. The soundtrack consists of narration and sound effects of storms, water, and the avalanche. The male narrator uses the words "decompose" and "erosion" numerous times and concludes with the question, "If all the land in the world is constantly being washed down to the ocean, why then isn't the land everywhere flat and level with the sea?"

Whereas, Meshes is stylistically dreamlike, replete with symbols and subtle distortions, Erosion is a teaching aid, concrete and expository. In Meshes dramatic action is depicted by the human characters who play central roles, while in Erosion humans are incidental to the dramatic action of inanimate geological processes.

Stimulus Effect Upon Large Sample

In order to determine differential effects of viewing Meshes, the Slide Sequence, and Erosion upon the mood of the viewer, they were shown to three undergraduate psychology classes. Sample 1 ($n = 28$) viewed Meshes, Sample 2 ($n = 52$) the Slide Sequence, and Sample 3 ($n = 55$) the Erosion film. Time of viewing was approximately the same for the three groups, ranging from 9:00 a.m. to 10:30 a.m. Participants had indicated their willingness previously to volunteer for a class period psychological experiment, but were not told the purpose or procedure beforehand. Each participant filled out the MACL immediately before and after viewing. Before and after MACLs were identical to the two forms used by the 12 dreamers in the study. N varied slightly for several adjectives due to failure of a few participants to check every adjective on the list. Data on age, sex, and recaller-nonrecaller status of participants were gathered but not analyzed for this study.

A one-way analysis of variance by ranks (Kruskal-Wallis) performed on mood before viewing showed Sample 1 (Meshes) to be significantly less sluggish than Sample 2 (Slide Sequence) and Sample 3 (Erosion) at the .02 level. No other mood adjective approached significance. Since this one difference (out of 49 adjectives) could occur at the .02 level by chance, it was concluded there was no difference in mood among the sample groups before viewing

Table II

ANALYSIS OF VARIANCE AND POSTHOC COMPARISONS OF
MOOD CHANGE AFTER FILM/SLIDE SHOWING TO SAMPLE

MAGL Mood Adjective	Sample Mean Change ^a			F	Scheffe's "True" Difference		
	1	2	3		1 X 2	1 X 3	2 X 3
AGGRESSION	Defiant	.61	-.04	-.18	6.169	.5709*	.6962***
	Annoyed	.79	.50	.13	3.490		.6734*
	Rebellious	.21	-.13	-.07	1.867		
	Fed Up	.36	.12	-.18	3.293		.5349*
	Grouchy			.103			
	Angry	.39	.25	.07	1.323		
ANXIETY	Jittery	.32	.18	-.05	2.303		
	Uptight	.86	.54	-.02	7.658	.4718*	.7294***
	Fearful	.54	.06	-.11	5.773	.5793***	.4962*
SKEPTICAL	Dubious	.19	.02	-.38	4.315		.5355*
	Skeptical	.11	.32	-.17	2.728		
	Suspicious	.89	.58	.23	4.149		.5824*
SURGENCY	Carefree			.193			
	Playful			1.015			
	Witty			.017			
	Lively			.777			
	Talkative			.028			
	Elated			.532			
ELATION	Overjoyed			.847			
	Pleased	-.68	-.73	-.22	5.003		.4240*
	Refreshed	-.39	-.53	-.18	1.313		
VIGOR	Active			.677			
	Vigorous			.379			
	Energetic			.090			
FATIGUE	Sluggish			.980			
	Drowsy	-.25	-.04	.44	5.165	.5766*	.4828*
	Dull	-.29	-.02	.13	1.789		
	Tired	-.43	-.13	.07	3.217	.4865*	
CONCENTRATION	Introspective	-.11	.02	-.31	1.795		
	Earnest			.678			
	Intent	-.21	.26	.13	2.574		
	Contemplative	.21	.10	-.16	1.663		
	Attentive			.544			
	Concentrating	.04	.25	-.16	2.510		
	Engaged in Thought	.14	-.12	-.22	1.483		
	Serious	.21	.04	-.11	1.726		
SOCIAL AFFECT	Kindly	-.79	-.44	-.35	2.480		
	Warmhearted	-.54	-.54	-.27	1.779		
	Forgiving	-.50	-.19	-.33	1.118		
	Affectionate			.403			
NONCHALANCE	Nonchalance	-.79	-.61	-.17	5.048	.5303*	.4446*
	Leisurely	-.39	-.31	-.09	1.122		

TABLE 11 (continued)

MACL Mood Adjective	^a Mean Change			$\bar{F}$	Scheffe's "True" Difference		
	Sample 1	2	3		1 X 2	1 X 3	2 X 3
Sad				.319			
Sorry	.39	-.04	-.02	2.699			
Regretful	.50	.02	.15	2.796			
Aloof	0	-.20	.04	1.378			
Self-centered				.772			
Egotistic	.15	-.12	-.15	1.696			
Boastful	0	-.16	-.27	1.243			

Note. A positive mean change indicates more of the particular mood (e. g., more Defiant, more Pleased).

^a Sample 1 (Experimental Film), Sample 2 (Experimental Slide Sequence), and Sample 3 (Control Film).

* Difference between means, $p < .05$

*** Difference between means, $p < .01$

either of the films or the slides.

Mood changes of various degrees were evident for all three sample groups after being exposed to the three conditions. In Table II it can be seen that the major significant differences clustered in the Aggression, Anxiety, Skeptical, and Fatigue factors. It seems that those who saw the Meshes film (and the Slide Sequence to a lesser extent) were more hostile, anxious, and aroused afterward than those who saw the Erosion film.

Dream Content Analysis

A set of simple, discrete, empirical categories was constructed for scoring the dream reports collected in this study, following the procedure outlined by Hall and Van de Castle (1966). Categories and number of subcategories under each were Objects (25), Characters (38), Settings (16), Activities (8), and Emotions (11). Eliminated from final analysis were 17 subcategories which were rarely scored. Also prepared specifically for this study was a list of 34 words (21 later analyzed), representing objects, themes, and activities appearing in the Meshes film and slides, to be used for tallying their appearance in dream reports (see Appendix D for an example of a score sheet and the actual scores of one dream from this study).

Two independent judges (graduate students in psychology), "blind" as to subject, dream series, night, and pre-sleep stimulus, analyzed the content of each dream report

using the previously mentioned scoring categories and tally words and then made a "yes," "no," or "maybe" judgment as to whether or not there was incorporation of material from the Meshes film or slides in that particular dream.

The judges were instructed in the Hall and Van de Castle scoring system by the experimenter in five one-hour sessions over the period of a month (see Appendix E for an example of the instructions). During these sessions the judges viewed Meshes four times and the Slide Sequence once. After training each judge was given a complete set of transcribed dream reports (208) arranged in different random order for each judge. Transcripts were unedited except for removal of references made by dreamers to the films or slides which would identify the stimulus condition. When a judge had completed half the dream reports, she returned for a follow-up session and a re-viewing of Meshes before finishing the second half. One judge finished scoring in seven months and the other in two and one-half months. Because of the magnitude of the task, judges were not asked to do some scoring necessary for testing the hypothesis that dream reports on Night 3 would be longer, more vivid, more emotional, and more imaginative than on other nights for those dreamers viewing the Meshes film or slides. This hypothesis (5) was modified to include only those elements (vividness, involvement, implausibility, and affect) rated by the dreamers themselves. To avoid interference with

their judgments of Meshes incorporation in dreams, the judges were neither shown the Erosion film nor asked to make judgments of transfer of Erosion film content to dreams.

RESULTS

None of the hypotheses proposed for this study were statistically verified. Details of results pertaining to each hypothesis are presented here, following baseline information from Night 1 and an account of interjudge reliability in the dream content analysis and validity of incorporation judgments.

Baseline Night 1

Data from baseline Night 1 (see Table III) showed the Nonrecallers in this study had significantly fewer REMPs than the Recallers ($t = 2.960$, $df = 9$, $p < .01$). On the average Nonrecallers spent one and one-third hours in the REM state and Recallers one and two-thirds hours. Recallers spontaneously recalled almost twice as many dreams as Nonrecallers on Night 1; four out of six Recallers recalled a total of seven dreams and three out of six Nonrecallers a total of four dreams.

There were no significant differences among Groups I (Meshes film), II (Meshes slides), and III (Erosion film) for number of REMPs, total time spent in the REM state, or average length of REMPs (see Table III). Spontaneous dream recall was essentially the same for Group I (3), Group II (4), and Group III (4). Six of the dreams recalled on Night

1 were from the last REMF of the night, while the other five were from earlier REMFs.

TABLE III

BASELINE REMF COMPARISONS FOR GROUPS AND
RECALLERS-NONRECALLERS ON NIGHT 1

Dreamers	Total REMF Time (minutes)		Average Time Per REMF (minutes)		Number of REMFs	
	<u>M</u>	<u>t</u>	<u>M</u>	<u>t</u>	<u>M</u>	<u>t</u>
Group I (<u>n</u> =3)	102.67		28.09		3.67	
X		.043		.393		.711
Group II (<u>n</u> =4)	84.75	<u>df</u> =5	19.90		4.50	
Group I (<u>n</u> =3)	102.67		28.09		3.67	
X		.013		.292		.515
Group III (<u>n</u> =4)	92.00	<u>df</u> =5	21.87		4.25	
Group II (<u>n</u> =4)	84.75		19.91		4.50	
X		.019		.105		.218
Group III (<u>n</u> =4)	92.00	<u>df</u> =6	21.87		4.25	
Recallers (<u>n</u> =6)	102.67		21.83		4.83	
X		.130		.104		2.961***
Nonrecallers (<u>n</u> =5)	79.80	<u>df</u> =9	24.08		3.40	

Note. Due to machine failure, Dreamer 3 (NR-Group I) was not recorded on the physiograph for Night 1.

 $p < .01$

Interjudge Reliability: Content Analysis

The unit for determining reliability between judges was the sum of scores for a single subcategory or tally word on each night for each group. When both judges decided that an element was absent it was not included in the reliability calculations, i. e., double zeros were removed to avoid artificially inflating the reliability figure.

The Pearson product-moment correlation coefficient was deemed a proper measure of reliability since there was no predetermined limitation on magnitude of scores and one judge did not consistently outscore the other. Acceptable r s were achieved for most categories (see Table IV). The reliability of judgments on Settings ($r = .649$), Emotions ($r = .643$), and Tally Words ($r = .668$) was considerably less than hoped for, requiring some caution in interpretation of results.

Scott's π (1955), developed for determining reliability of content analysis using a nominal scale, was selected for the "yes," "no," and "maybe" judgments of incorporation ($\pi = .255$). In this statistic, π "can be roughly interpreted as the extent to which the coding reliability exceeds chance" (1955, p. 323). In the present study there was much less expectation of "yes" than "no" judgments since only Nights 3 and 4 and Groups I and II were the "yes," or "hit," area, and within that area there is no precedent for predicting how many dreams would have incorporation.

TABLE IV

INTERJUDGE RELIABILITY COEFFICIENTS, MEANS, AND
STANDARD DEVIATIONS FOR SCORES AND TALLY WORDS

Category	<u>r</u>	<u>M</u>	<u>SD</u>	Sum	<u>n</u>
<u>Scores</u>					
Objects	.9217	8.663	8.149	2131.00	246
		8.248	8.962	2029.00	
Settings	.6491	2.718	2.704	299.00	110
		2.709	2.735	298.00	
Characters					
Identity	.9815	7.134	12.409	906.00	127
		6.898	11.242	876.00	
Age	.9936	27.633	38.810	829.00	30
		26.733	36.573	802.00	
Sex	.9331	16.898	11.559	828.00	49
		16.286	13.130	798.00	
Number	.9912	17.292	23.455	830.00	48
		17.917	25.410	860.00	
Activities	.9621	17.348	18.459	1544.00	89
		16.551	18.314	1473.00	
Emotions	.6434	4.032	4.072	383.00	95
		3.853	3.598	366.00	
<u>Tally Words</u>	.6685	1.710	1.745	265.00	155
		1.871	2.379	290.00	

Therefore, Scott's π was considered a particularly apt instrument since the "true" distribution of agreements is determined from the judges' own distribution (see Table V). Perfect agreement on "no" was 85%, on "yes" 31%, and "maybe" 29%.

TABLE V
INTERJUDGE RELIABILITY USING SCOTT'S π FOR JUDGMENTS
OF INCORPORATION OF EXPERIMENTAL FILM AND
SLIDE CONTENT IN DREAMS

		Judge 1		
		Yes	No	Maybe
Judge 2	Yes	4	6	8
	No	2	137	14
	Maybe	2	25	10

$$\pi = .255 > \text{chance}$$

$$\sigma_{\pi}^2 = .00097$$

A .255 better than chance reliability does not give any indication of whether the judgments were hits or misses. Looking at percent of dreams judged by either or both judges as having incorporation and treating "yes" and "maybe" equally, we find the same percent of judgments in the miss area as in the hit area--34%. This casts doubt on the validity of incorporation judgments and/or the criteria for judgments.

Hypothesis 1

It was predicted that the two films and the slides would have differential effects upon dreams of subjects in the three groups. To summarize briefly, there were consistent tendencies to differ in dreaming style among the three groups on the night of the presleep condition in the direction predicted, i. e., the two groups viewing the emotionally arousing Meshes film and slides were similar in style and opposite in style to the group viewing the "neutral" Erosion film, on recall, number of dreams reported, and total REMP time with recall. Evidence for differential dream content among Groups I, II, and III was inconclusive, with differences being close to chance levels of significance.

Dreaming style analysis. Dreaming style refers to number of REMPs, total REMP time, percentage of recall, types of nonrecall, and number of dreams reported.

On Nights 2 and 4 no differences in dream recall ability were experienced by Groups I, II, and III. However, Table VI shows a marked drop in percentage of dreams recalled by Group II on Night 3 after the presleep stimulus. Table VII shows a decrease in total number of dreams on Night 3 for both Groups I and II as compared with Group III, which actually had more dreams that night than any other night. Total REMP time varied over nights among the three groups ($\chi^2 = 58.05$, $df = 4$, $p < .001$).

TABLE VI

PERCENTAGES OF DREAM RECALL FOR GROUPS
AND RECALLERS-NONRECALLERS
ON NIGHTS 2, 3, AND 4

Dreamers	Total Awaken- ings	Total Dreams Recalled	Total % Recall	Ngt 2 % Recall	Ngt 3 % Recall	Ngt 4 % Recall
Group I	59	52	88	90	83	90
Group II	72	53	74	83	52	88
Group III	75	67	89	95	92	81
Rs	91	76	84	84	76	90
NRs	115	96	83	94	75	83

Note. The discrepancy between the total number of dreams recalled (172) and the number of dream reports analyzed by the judges (208) is due to the absence in this table of the 11 dreams of Night 1, and the fact that sometimes in a single dream report dreamers maintained there were several dreams which were then analyzed as such by the judges, but treated as one in this table.

TABLE VII

REMP TIME COMPARISONS FOR GROUPS AND RECALLERS-
NONRECALLERS ON NIGHTS 2, 3, AND 4

Dreamers	Night 2			Night 3			Night 4		
	Total REMF (minutes)	Total REMF With Recall (minutes)	Number of Dreams	Total REMF (minutes)	Total REMF With Recall (minutes)	Number of Dreams	Total REMF (minutes)	Total REMF With Recall (minutes)	Number of Dreams
Group I	273.5	259.5	19	244.5	176.0	15	264.0	249.0	18
Group II	280.0	232.0	19	283.0	154.0	13	252.0	217.0	21
Group III	293.0	286.0	21	314.0	299.0	24	289.0	257.0	22
Recallers	469.0	427.0	27	429.5	329.0	22	394.0	365.0	27
Nonrecallers	377.5	350.5	32	412.0	300.0	30	411.0	358.0	34

Dream content analysis. A $3 \times 2 \times 3$ analysis of variance for Nights, RNR, and Groups, with Nights as a repeated measure, was performed on each of 102 dream content variables scored and tallied by the judges. Sums of scores for the two judges were used. In addition, since dreams of Night 2 occurred before and those of Nights 3 and 4 after the presleep stimuli of Night 3, a $2 \times 2 \times 3$ analysis of variance of the scores for Night 2 (doubled) $\times$ the scores of Nights 3 and 4 combined was undertaken for all variables. Posthoc comparisons by the Scheffé method were conducted for those variables having a significant difference according to the F test. The Scheffé method does not require the means being compared to be independent and is suitable for any linear combination of means. Therefore, a simple comparison of means by pairs for all significant main effects and interaction effects and a comparison of the difference between one pair of means and another pair (difference between differences) for significant interaction effects were carried out.

Because of the high variability of dream content and the exploratory nature of this study, significance levels of .10 and better were considered. Significant differences were found for main effects and/or interaction effects in 48 of 102 variables. Twelve Objects, 11 Characters, 7 Emotions, 4 Settings, 3 Activities, and 11 Tally Words were represented. Of the 86 significant F numbers for main

effects and interaction effects, 52 were at the .10 level, 21 at .05, 10 at .02, and 3 at .01 (see Tables VIII and IX). This includes duplication of some variables owing to the two types of analyses carried out.

Considering the large number of variables and interaction between variables, it was decided that the significant differences found were little better than chance.

(A brief summary of differences may be found in Appendix F). A few interesting patterns were noted (e. g., on Night 3 those viewing the Erosion film had significantly more dream content dealing with physical activity, travel, and regions, than those viewing the Meshes film and slides), but their significance is questionable with differences near chance levels.

Hypothesis 2

It was predicted that the dream film and slides would affect Recallers and Nonrecallers differently and that Recallers and Nonrecallers in these two groups would differ from those viewing the "neutral" film. The statistical procedures described under Hypothesis 1 failed to find significant differences between Recallers and Nonrecallers for either dream content or recall ability based upon treatment.

Further analyses of variance were conducted on those dream content variables showing differences between Recall-

TABLE VIII

ANALYSIS OF VARIANCE SIGNIFICANCE LEVELS OF NIGHTS, RECALLERS-NONRECALLERS (RNR), GROUPS, AND INTERACTION EFFECTS FOR DREAM CONTENT SCORES ON NIGHTS 2, 3, AND 4 AND ON NIGHT 2 BY NIGHTS 344

Content Items	Nights 2x3x4 2x344	RNR 2x3x4 2x344	Groups 2x3x4 2x344	Nights X RNR 2x3x4 2x344	Nights X Groups 2x3x4 2x344	RNR X Groups 2x3x4 2x344
<u>Objects</u>						
Architecture						
AR Residential		*				
AV Vocational		^				
AE Entertainment				^	^	^
AI Institutional					**	
AD Detail						^
AB Building Materials						
AM Miscellaneous						
HH Household Articles						
FO Food or Drink				*	*	
Implements						
IT Tools						
IW Weapons						
IR Recreational						
IR Travel				*	**	**
ST Streets						
RG Regions				*		
NA Nature	^					
Body Parts						
BH Head						
BE Extremities		^		*		
BT Torso						
BS Sex						
CL Clothing						
CW Communication				*		
MO Money						
MS Miscellaneous				^		

TABLE VIII (continued)

Content Items	Nights 2x3x4 2x3x4	RNR 2x3x4 2x3x4	Groups 2x3x4 2x3x4	Nights X RNR 2x3x4 - 2x3x4	Nights X Groups 2x3x4 2x3x4	RNR X Groups 2x3x4 2x3x4
<u>Characters</u>						
Identity						
F Father						
M Mother						
X Parents						
B Brother						
T Sister						
Y Family Members						
R Relatives						
K Known						
P Prominent						
O Occupational						
E Ethnic						
S Strangers						
L Experimenter						
ANI Animal						
QZZ Creature						
Age						
A Adult						
T Teenager						
C Child						
B Baby						
Sex						
M Male						
F Female						
J Joint Sex						
I Indefinite						
Number						
1 Single Character						
2 Plural Characters						
7 Original Form						
8 Changed Form (Metamorphosis)						
5 Imaginary						

TABLE VIII (continued)

Content Items	Nights 2x3x4 2x3x4	RNR 2x3x4 2x3x4	Groups 2x3x4 2x3x4	Nights X RNR 2x3x4 2x3x4	Nights X Groups 2x3x4 2x3x4	RNR X Groups 2x3x4 2x3x4
<u>Settings</u>						
ID Indoor Distorted						
IF Indoor Familiar						
IU Indoor Unfamiliar						
IQ Indoor Questionable						
OD Outdoor Distorted						
OF Outdoor Familiar						
OU Outdoor Unfamiliar						
OQ Outdoor Questionable						
AU Ambiguous Unfamiliar						
AQ Ambiguous Questionable						
NS No Setting						
<u>Activities</u>						
P Physical						
M Movement						
L Location Change						
V Verbal						
E Expressive						
S Visual						
A Auditory						
C Cognitive						
<u>Emotions</u>						
AI Anger						
AP Apprehension						
HA Happiness						
SD Sadness						
CO Confusion						
SX Sexual Desire						
CN Concentration						
EG Egotism						
VG Vigor						
NE No Emotion						
<u>Significance</u>						
*	p < .10					
**	p < .05					
***	p < .02					
***	p < .01					

TABLE IX

ANALYSIS OF VARIANCE SIGNIFICANCE LEVELS OF NIGHTS, REGALLERS-NONREGALLERS (RNR), GROUPS, AND INTERACTION EFFECTS FOR TALLY WORDS ON NIGHTS 2, 3, AND 4 AND ON NIGHT 2 BY NIGHTS 3

Tally Words	Nights 2x3x4 2x3x4	RNR 2x3x4 2x3x4	Groups 2x3x4 2x3x4	Nights X RNR 2x3x4 2x3x4	Nights X Groups 2x3x4 2x3x4	RNR X Groups 2x3x4 2x3x4
Key						
Flower						
Knife						
Telephone						
Phonograph						
Bread						
Mirror						
Glass						
Stairs						
Window						
Door						
Overstuffed Chair						
Lock						
Hand						
Eye						
Lips-Mouth						
Throat						
Sunglasses						
Surf-Beach						
Blackrobed Person						
Multiple Selves						
Death						
Death-Injury						
Insanity						
Falling						
Climbing						
Cutting						
Chasing						
Repetition						
Man-Woman Encounter						
Music						
Media						

α .05
 * .05
 ** .02
 *** .01

ers and Nonrecallers to determine whether sex was a confounding influence. Only two differences were found between men and women out of 44 variables tested.

Several differences between Recallers and Nonrecallers in general were discovered as a result of the data analysis. On Nights 2, 3, and 4 when dreamers were awakened during REMPs, there was no difference between total percent of dreams recalled by Recallers (84%) and Nonrecallers (83%) (see Table VII). However, Nonrecallers were awakened a total of 115 times to 91 times for Recallers ($\chi^2 = 49.05$, $df = 2$, $p < .001$). This is an intriguing variation. Ordinarily after a dreamer was awakened during a REMP for a dream report, she or he fell asleep again, passing into NREM before having another dream period. Occasionally a dreamer would pass immediately into REM state after making the dream report. When this happened, the second (and sometimes, the third) REMP was considered as a single unit with the first REMP, since they were not separated by NREM. The data in Table X show this multiple dream REMP phenomenon occurred only with Nonrecallers. Also, Nonrecallers spontaneously awoke and reported dreams following a NREM state three times, while Recallers reported no dreams following NREM periods on Nights 2, 3, and 4.

Other differences involved total REMP time (see Table VII) which decreased steadily over nights for Recallers and increased from Night 2 for Nonrecallers on Nights 3 and 4

($\chi^2 = 34.84$, $df = 2$, $p < .001$), and number of REMPs, with Nonrecallers increasing more from the baseline over three nights than Recallers ($\chi^2 = 16.72$, $df = 2$, $p < .001$).

Additionally, physical complaints of the dreamers directed toward laboratory conditions, differentiated Recallers and Nonrecallers, with four of six Recallers and one of six Nonrecallers ($p < .06$) manifesting such behavior.

TABLE X
MULTIPLE DREAM REMP PHENOMENON OF NONRECALLERS

Dreamers	Number of Multiple Dream REMPs	Number of Dreams in Multiple REMPs
Recallers	0	0
Nonrecallers:		
3	1	2
4	0	0
7	7	15
8	3	6
11	3	6
12	3	9
Total	17	38

Hypothesis 3

It was predicted that there would be more contentless reports of dreaming for Groups I and II on the night of the presleep stimulus than on other nights. The criterion for contentless dreaming is that the dreamer has a feeling of

having been dreaming but no memory of details, except possibly a single fragment (e. g., "I think I was at the dinner table or something" and "Something visual but I can't think of it"). Another type of nonrecall is the dreamless report, i. e., the dreamer has no memory of dreaming, exemplified by the phrase, "I can't remember anything."

The prediction was not supported (see Table XI) since contentless reports of dreaming varied only slightly among groups over nights. However, there was more failure to recall in general on Night 3, 48% of 34 nonrecall reports occurring on that night. Unexpectedly, dreamless reports rather than contentless reports proved to be the distinguishing variable. Three-fourths of the dreamless reports were from Group II, which accounted for 69% of such reports on Night 3. This was an increase for Group II of 89% from Night 2. It should also be noted that Recallers were responsible for 61% of the contentless reports, whereas Non-recallers accounted for 69% of the dreamless reports over three nights.

TABLE XI

FREQUENCY OF TYPES OF NONRECALL FOR DREAMERS
OVER THREE NIGHTS

Dreamers	Contentless			Dreamless		
	Nights			Nights		
	2	3	4	2	3	4
Recallers	5	3	3	0	4	1
Nonrecallers	1	4	2	1	5	5
Group I	2	2	1	0	1	1
Group II	3	3	1	1	8	3
Group III	1	2	3	0	0	2

Hypothesis 4

Results showed a negative correlation between the number of dreams with transfer of Meshes film and slide elements and emotional arousal in response to the presleep stimulus, thus, lending no support to the prediction that incorporation would be dependent upon the magnitude of the dreamer's mood change. No judgments were attempted concerning incorporation of Erosion film elements.

In absolute terms, a dreamer's mood, as measured by the MACL, could shift as much as three points after viewing the stimulus, either from zero (Not At All) to three (Definitely) or in the opposite direction. Absolute mood shift for Groups I, II, and III was 137, 161, and 124 points,

respectively. Although this indicates the Meshes film and slides induced more mood change than the Erosion film, it is not the complete picture. On the basis of the large sample results, expectations were that the Meshes film and slides would effect a positive mood shift on aggression, anxiety, skepticism, and sadness and a negative shift on surgency, elation, fatigue, social affection, and nonchalance. By subtracting unexpected shifts in mood from expected ones, a single mood change score was derived for each dreamer. The average Expected-minus-Unexpected score for Group I was 20.8 (range 41.3 to -10.7) and for Group II it was 38.0 (range 69.9 to 5.6).

There was a negative correlation between absolute mood shift for dreamers in Groups I and II and "yes" plus "maybe" judgments of dream incorporation of Meshes film and slides content (Group I, $r = -.378$; Group II, $r = -.779$). This would seem to suggest, on the surface, that the more effect Meshes had upon the mood of the dreamer, the less frequently she or he would dream about it.

Hypothesis 5

A modified Hypothesis 5 (see p. 29) that self-ratings by the dreamer would show more vividness, emotionality, involvement, and implausibility in her or his dreams of the night of the dream film and slide viewing than on the night before or after, was not supported.

A three-way analysis of variance for Nights, RNR, and Groups with Nights as a repeated measure was conducted on dreamers' ratings of their own dreams (see Appendix B for criteria). No significant differences were found for main effects or interaction effects.

Groups I and II tended to rate their dreams as more plausible on Night 3 than any other night, while Group III found their dreams more implausible on that night. Groups I and II felt their dreams increased in unpleasantness over Nights 2, 3, and 4. Group III found their dreams on all nights more unpleasant than the other two groups, but decreasing slightly from a high on Night 2.

Hypothesis 6

It was predicted that effects of the presleep stimuli would carry over to the dreams of the night following exposure to the stimuli. Evidence from the dream content analysis for this prediction was inconclusive, because of near chance levels of significance (see Hypothesis 1). Analysis of dream recall ability failed to support the hypothesis, indicating instead a tendency for dreamers in Groups I and II to recover on Night 4 from the previous night (see Tables VI and VII).

DISCUSSION

Simply stated, the hypotheses of the present study proposed that an emotionally-arousing presleep experience would be transferred in recognizable form to dreams of that night and the following night. The results did not support this prediction. Judges were unable to determine from the content of dream reports whether or not a dreamer had viewed the stress film or slides or the "neutral" film. In the interests of future dream research, this chapter will deal with: (a) the possibility that presleep stimuli are not incorporated in dreams; (b) speculations about the results obtained in this study; (c) an evaluation of the judgment criteria, measurement instruments, and statistical methods employed, with suggestions for other, hopefully better, ways to research the relationship of day experiences and dreams; and (d) differences between recallers and nonrecallers.

Relationship of Waking Experience and Dreams

The incorporation of waking experience in dreams has been established by numerous studies finding direct transfer of the laboratory experience to the dreams of subjects (Bregger et al., 1971; Dement et al., 1965; Domhoff & Kamiya, 1964b; Hall, 1967; Whitman, Kramer, & Baldrige, 1963; Whitman et al., 1962; Witkin, 1969). Likewise, the laboratory

situation was found to be a potent source of dream material in the present study (see Posthoc Analyses). Stressful life situations (Breger et al., 1971) also have had a significant effect upon dream content.

This does not explain why the presleep film and slide conditions, being part of the laboratory experience, would not be incorporated also in dreams. Prior studies using film as a presleep stimulus have found little evidence of direct incorporation. Foulkes and his colleagues found from five to eight percent direct incorporation of film content in their subjects' dreams (Foulkes et al., 1967; Foulkes & Rechtschaffen, 1964) and Witkin et al., (1965) has reported incorporation of peripheral, insignificant elements only from their films (see Dement, 1972, p. 66). In the present study only one dreamer (who viewed the Meshes slides) had a direct, unambiguous transfer of Meshes content to a dream (Night 4).

Explanations for failure to objectively trace a pre-sleep event in laboratory-based dreams can range all the way from behavioral theory that dream images are randomly generated by noise in the nervous system activating stored daytime perceptions, to the psychoanalytic theory that dream images are disguised symbolic representations of repressed wishes and stressful daytime experiences.

Between these extremes, one can speculate that:

1. There may be a hierarchy of waking experiences to
-

be dealt with in dreams and the film and slide viewing experience had a low priority.

2. Amount of time involved in waking experience may be crucial for incorporation. For example, dreamers in this study spent at least eight waking hours in the laboratory situation, compared with 15 minutes spent viewing the film or slides.

3. Being involved in a laboratory experiment is a part of the subject's "real" world, causing changes in daily routine, providing conversational material, etc., while viewing a film may not fulfill the same criteria for a meaningful waking experience.

4. Nearness of an experience to the onset of sleep could be a distinguishing variable. There may be a minimum amount of waking time necessary for processing an experience before dream processing takes place. In this study only 10 minutes elapsed between the end of the film and "lights out."

Other possibilities dealing specifically with : (a) the presleep stimuli characteristics, i. e., moving vs. still images and stressful vs. neutral content; and (b) methodological inadequacies, are discussed in the following two subchapters.

Effect of Films and Slides on Dreaming

A major purpose of this study was to explore the effect of a controlled day experience, the viewing of a film, on the

dream life of the subjects. This tracer event was further controlled to distinguish emotional content and movement as possible determinants of any effect. Group I was shown a film with considerable emotional impact (Meshes film), Group II was shown the same emotional content in a slide show with movement of the images removed (Meshes slides), and Group III was shown a different film with little emotional content (Erosion film).

Statistical evidence for differences amongst the three groups was slight. Some of the least ambiguous variations over nights, distinguishing the Meshes film and slides viewers from the Erosion film viewers, occurred in failure to recall, number of dreams reported, and total REM time. Differential mood change after viewing the Meshes film and slides was noted between Group I and Group II.

Stressful vs. "neutral" content. Because of its emotionally arousing aspects, it was expected that Meshes would stimulate dreaming (Foulkes & Rechtschaffen, 1964); the converse was true. In fact, considerable evidence suggests that it was the Erosion film which stimulated dreaming, while the Meshes film and slides inhibited dreaming, more pronouncedly so in the case of the Meshes slides than the Meshes film. After viewing the Erosion film on Night 3, dreamers in Group III reported more dreams, spent more total time in the REM state, and found their dreams more implausible, that night than on nights before and after. Groups I

and II after viewing the Meshes film and slides, reported fewer dreams that night than on other nights, and while Group I spent less total time in the REM state and Group II more time in the REM state that night, they both experienced the greatest percentage of recall failure that night and found their dreams more plausible.

Differences among the three groups in dream content related to the laboratory situation will be dealt with later (see Posthoc Analyses).

One explanation for the differential effect of Erosion and Meshes could lie in the imagery styles of the two films. The concrete imagery of Erosion may have required more translation in dreams than the dreamlike imagery of Meshes. Supporting this hypothesis is a spontaneous observation made during the association session by Dreamer 4, the only person in Group I to report considerable arousal and anxiety following Meshes:

It seems the film cut a lot of vividness out of the dreams that I did have...only one was very vivid at all (that night)...maybe seeing the movie is...I don't know...I was thinking maybe it was more that seeing a movie was like a dream, so maybe you didn't need to dream as vividly in order to satisfy your dreaming.

Additionally, the superficially nonthreatening nature of Erosion may have allowed dream processing to take place, while the superficially threatening nature of Meshes may have aroused defenses which postponed processing. An obvious association to the violent ending of Meshes is human death.

A more subtle translation is required to associate the gradual wearing away of mountains in Erosion with aging and death, although two dreamers in Group III indicated they had made this association, during the film inquiry. Another point of view would be that the unstimulating and concrete quality of Erosion, described as a "boring" and "high school level" film by Group III, aroused a compensatory need for stimulation and implausibility, later satisfied in their dreams.

Witkin (1969) predicted that dreams following stressful films would contain more anxiety and thus be more subject to repression and forgetting (specifically, contentless reports of dreaming) than dreams following nonstressful films. He found a significant increase in contentless reports. Opposite results were obtained in the present study. The marked increase in dreamless reports on Night 3 was mainly due to one high-anxiety Nonrecaller, Dreamer 8, who remembered no dreams from six REMPs, accounting for five of eight dreamless reports from Group II that night. (This atypical subject and his dreams of Night 4 are described in depth in the last chapter.) Also, an unplanned consequence of the method of dream report solicitation used to prevent response bias, i. e., "What was going through your mind?" may have been the classification of some contentless reports of dreaming as dreamless reports.

Moving vs. still images. It is felt that the substantial

increase in failure to recall on Night 3 for Group II represents a stress reaction to the Meshes slides. Further evidence lies in the greater emotional arousal elicited by the slide viewing along expected dimensions reported by three out of four Meshes slides viewers as compared with one out of four Meshes film viewers. The three aroused dreamers in Group II subsequently had dreams of nightmarish quality and content. Two of these three dreams were rated by both judges as having incorporation of Meshes elements. These same three dreamers described the action and plot of the Meshes slides more briefly and in less detail and expressed more feelings of confusion, puzzlement, and failure to understand than either Dreamer 6 in their group or the four dreamers of Group I. Dreamer 7 complained that his "mind was bounced around all over the place," and Dreamer 5 observed, "I was watching it really hard to see what was happening and then my eyes started to hurt because I forgot to blink them." This leads to the speculation that the larger investment of attention required for viewing the slides and the greater uncertainty about their meaning resulted in a more frustrating and unresolved experience for Group II than for Group I. Reactions to this presleep experience were highly individualistic. Witkin (1969) has stressed that dreamers differ greatly in their response to stress films, both cognitively and affectively, in the waking state and the dreaming state. Breger et al. (1971) remark that:

Subjects react in widely different--and sometimes even opposite--ways to stimuli which are, objectively, "the same." The viewing of a stressful film may result in increased heart rate in one subject; decreased heart rate but increased GSR in another; and no particular reaction in a third. To assess accurately the effects of such an experience one must take these individual reaction patterns into account. If one does not (i. e., if subjects are treated as a homogeneous group), the results are likely to cancel each other out. The same thing applies to dream content viewed as an outcome of some arousal experience. (p. 186)

The low incidence of direct incorporation of elements from the Mesher film and slides is consistent with results obtained by others. In an elaborately analyzed study, Witkin et al., (1965) found only veiled references to stressful childbirth and circumcision rite films in dreams of their adult subjects (see Dement, 1972, p. 66). Foulkes and Rechtschaffen (1964) found only 5% direct incorporation of violent and nonviolent TV film content in 179 dreams of adults and a comparable 8% incorporation from a violent Western and a documentary-type baseball film in dreams of male children in a later study (Foulkes et al., 1967). Foulkes and Rechtschaffen used less stringent methods for determining incorporation than those of the present study. For example, dream reports were from two nights in the lab for each dreamer and since both of these nights involved a film viewing experience, the judges' task was simply to predict whether the dream was from the night of the violent film or the nonviolent one. Statements by the dreamer in the dream report concerning incorporation were not deleted, one

of the two judges was one of the experimenters (who rated the dreams a year after collection), and criteria for incorporation judgments were subjective,

when a coincidence of elements sufficiently unusual or elaborated seemed to indicate the film as their most likely source in the dream. (1964, p. 990)

It is not surprising that one judge was accurate in postdicting the night of the dream in seven out of eight "certain" incorporation judgments and the other judge in nine out of ten judgments.

Methodological Critique

This experimenter proposes that evidence for the incorporation of the stressful presleep experience in subsequent dreams in this study was confounded and masked by the statistical methods used, the type of content analysis employed, unpredictable interactions, and factors inherent in the dreams themselves. These confounding influences, and suggestions for avoiding them, are considered in detail in the following nine areas:

1. Nature of the study. The length of time required for processing a relatively small number of dreams in laboratory based research precludes large sample sizes. In this study approximately 60 hours were spent collecting and transcribing data from each dreamer. Data analysis easily involved twice that amount of time. Considering the small number of subjects and the highly variable features of the data,

statistically significant results from dream content analysis are unlikely.

2. Statistical method. Quantification of complex verbal material such as dream reports necessitates abstracting information from the raw data by means of a coding system. Results obtained in subsequent analyses should be interpreted according to how validly the coding system represents the raw data and how important is the remaining uncoded data to the questions posed. For instance, data relevant to the central problem of this study which were uncoded and therefore, not submitted to statistical analysis, included Sentence Completion forms, Day Reports, Film Inquiries, and associations to the dreams.

Additionally, one problem intrinsic to a study with a small n is that deviations by one or two subjects will have a disproportionate effect upon statistical results. Furthermore, highly significant qualitative differences and individual inconsistencies are lost in the "error" term of the quantitative method. For example, when Dreamer 8 failed to recall any dreams on Night 3, he contributed no information for content analysis that night, thus magnifying the variation of scores in Group II.

A cluster analysis would have been a more suitable statistical method for this study, but limited resources prevented it.

3. Independent "blind" judges. Some consideration was given to the fact that the two psychology graduate students who volunteered for the content analysis were unlike in intellectual style, interests, and scientific method, one being experimentally and the other clinically oriented. Judge 1 was literal, pragmatic, and well-structured, while Judge 2 was symbolic, less-structured, and tolerant of ambiguity. Both were conscientious and painstaking. It was feared they might dichotomize along conservative-liberal dimensions in incorporation judgments. Nevertheless, it was hoped that by instructing them together, comparing scoring of sample dreams, and reconciling disagreements, reliability would be high and judgments accurate, thus providing a rigorous test of the instruments and stronger support for the hypotheses.

It turned out as feared; Judge 1 erred in the direction of false negatives and Judge 2 in the direction of false positives. Judge 2 accounted for 69% of the "yes" judgments with 55% accuracy, while Judge 1 was accurate 50% of the time. When less proof was required for "maybe" judgments, Judge 2 (accounting for 54% of the judgments) was more incautious, achieving only 29% accuracy. Judge 1, who assigned many dreams to the "maybe" column that Judge 2 put in the "yes" column, had 44% accuracy. The large discrepancy in amount of time the judges took for the task (seven months and two and one-half months) allowed a greater margin

for low reliability. It was initially planned to have the judges analyze the dreams a second time, "unblind," with association and personality data added, but time and other commitments ruled against it.

In retrospect it was felt that the judgment criteria, Hall and Van de Castle's scoring system and the tally system designed specifically for this study, were too limiting and concrete for the intended purpose. A better method might have been a subjective assessment of the dreams by four people using their own intuitive criteria for incorporation judgments. These criteria could be analyzed later to discover the consensus of those related to accurate judgments.

4. Idiosyncratic symbolization of Meshes symbols.

The set of symbols available to the dreamer is, for all practical purposes, infinite. It draws from all the dreamer's experiences since birth, perhaps even from archetypal sources (Jung, 1964). Add to this the great diversity in personalities, coping styles, awareness, and so on, plus the present state of mind of the dreamer, recent day experiences, and current life problems. It is not surprising then that a number of individuals, having a similar 15-minute experience before going to sleep may process this event in their dreams in as many different ways, or in fact, may not process it at all. The elements of the presleep experience might appear in dreams overtly or transformed into idiosyn-

cratic symbols whose meaning is known only to the dreamer. By conducting a film inquiry and an association session with each dreamer, some possible latent relationships between Meshes and dreams were indicated. This information, of course, was unavailable to the judges.

5. Interaction between day experiences and Meshes symbols. It is impossible to assess the influence of certain film symbols upon dreams when the same objects figured prominently in the daily activity of the dreamer. For example, on Day 4 Dreamer 4 spent eight hours slicing meat at work until he was exhausted. Not surprisingly, he dreamed about cutting things with a knife that night. Dreamer 5 came to the lab each night from a part-time job as a telephone operator. When she dreamed about talking on the telephone, was it a result of her job, the telephone in Meshes, the laboratory intercom system, or none of these? Since the judges did not have access to Day Reports they could not take such interactions into consideration when making incorporation decisions, which may have resulted in some false positive judgments.

Dreamer 7 began a new job the week he spent in the lab, caring for children in an afterschool program. He had numerous dreams with grade school and high school settings and friends from his childhood. Dreamer 12, who walked home through city streets after work each day, had job-related dreams in REMP 1 and walking-on-city-streets dreams in

REMP 2 on all three nights. The Day Reports are a rich source for a future study of the proximity of day experiences to incorporation in the nightly REM sequence.

6. Interaction between experimental situation and Meshes influences. Dreams indicating no Meshes incorporation, nevertheless, were influenced by the "extraneous" conditions of the presleep event. The unexpected interruption of the laboratory routine, additional equipment, the MACL task, and the unspoken expectation to "dream about the film," caused annoyance, anxiety, frustration, confusion, and suspicion, which interacted with emotions aroused by the actual content of the film and slides. This effect is dealt with in considerable detail in a later chapter (see Posthoc Analyses).

7. Coincidence of themes of Meshes and Erosion. An unexpected finding of the study was that dreamers viewing Erosion dreamed more of death than those viewing Meshes. As remarked earlier two dreamers in Group III consciously made an association between the leveling of land over thousands of years by erosion, and human aging. It was suggested that the inexplicitness of this relationship in Erosion allowed dreamers to deal more readily with the association in their dreams.

Interpretation difficulties are encountered as well when there is a dichotomy of themes. On Night 3 when Group III had significantly more physical activity (in a limited

spatial area), travel, and region content in their dreams than Groups I and II, was this a reflection of the expanded setting of Erosion (large land areas in various western states, aerial shots, etc.) or of the condensed setting of Meshes?

8. Coincidence of a life crisis with the theme of Meshes. Eight of the dreams of Dreamer 12 were rated by one or both judges as having some Meshes incorporation. Actually, Dreamer 12 viewed the Erosion film. Although he had never seen Meshes, his dreams were replete with Meshes symbols, such as windows (six dreams), mirrors, multiple selves (two dreams), and glass shattering. Facades of buildings in several dreams seemed a transfer of his daily experiences walking in the city. Crumbling walls and three dreams about old people trying to keep up appearances suggest that Erosion also added material for his dream explorations into the persona and the self.

Dreamer 12 was a young man undergoing an identity crisis and some major changes in his lifestyle. At the time of the dream study he was in the midst of a struggle between liking himself and wanting to be someone else. He revealed in the Sentence Completion that: "I am sensitive about my appearance;" "When I am older I swear to god I'm going to like what I look like;" "My greatest mistake was trying to be like my brother;" and "I need to free myself from being 30 years old and be the age I am."

In his associations to one dream, Dreamer 12 said,

I wished that I looked different, that I could change my appearance and that people I knew could see me and they wouldn't recognize me...to experience going somewhere without being me, to be someone else...sometimes I can look in the mirror and I like what I see and I feel there's vitality around me and then other times I look in the mirror and I don't like what I see and I just go, "Oh, god!"...it's just that I don't look right.

Dreamer 12 had two dreams of multiple selves in which he watched someone masquerading as him who was in reality himself. He described his other self in one dream:

The person had a sort of glow of activity and excitement spinning around her head...people were looking at me like I was another person..as though I were someone of a different personality...I felt jealous and then I started realizing that it was me and I didn't believe it...I didn't want to believe it...it was sort of scarey...what the hell is this person, parading around, masquerading...being me.

In the other dream he relates,

I came to the street where I live...and I looked up at my windows....and saw myself.....I didn't like knowing that there was another one of me....wandering around...living in my apartment.

As a child, Dreamer 12 was badly frightened by a laughing, mechanized dummy in an amusement park funhouse and even earlier, he had recurring nightmares about his sister's marionnette. To this day, mechanical figures, costume shop dummies, and carousel music give him the "creeps." In the lab he had one dream of sliding down a bumpy hillside in a park, with carousel music in the background, and another dream of a slot machine with animated figures in a western

shootout scene.

The fact that this man's dream symbols and current life theme coincided so well with the symbols and theme of Meshes actually affirms the truth and brilliance of the film's imagery. In the interests of controlling for the possibility of such interaction in future studies of this sort, a more mundane film might prove a better choice. Additionally, an emotionally neutral and concrete film such as Erosion, would be expected to produce a less idiosyncratic response across subjects than a stressful, abstract film such as Meshes.

By comparison, Dreamer 11, also a Nonrecaller in Group III, was undergoing a different sort of identity crisis. Her low self-image and depressed state of mind from an unhappy love affair two years before (see Appendix A for her Sentence Completion protocol) did not result in dream symbols coinciding with those of Meshes. She revealed that her participation in the dream study was the first step in a decision to seek therapy the next week. She remarked,

I feel very tied up in knots over what I dreamed... I'm horrified when I think of how much of my content has to do with my work...and how much my paranoia is obvious and how much of my insecurity...you know, I didn't have one happy dream, and it doesn't surprise me, it kind of fits with where I'm at.

9. Interpretation of dreams in isolation. "Blind" judges work under a handicap when they must treat each dream

as an independent unit. Knowledge that a dream belongs to a series of dreams of a single individual or night seems essential for tracing a presleep event in the personal symbols of the dreamer. Even then, a dream series collected over only three nights as in this study, provides meager information for interpretation. Breger (1974) studied the process of accommodation to and creative solution of problems in the life of a child through a selection of dreams at ages $7\frac{1}{2}$ and $8\frac{1}{2}$ and information about earlier important events in this child's life.

The personal dreams of this experimenter illustrate the value of a longitudinal study of an individual's dreams for ascertaining meaning. Recently I had a dream about a psychologist whose encounter group I attended for six months five years ago. An account of the dream follows:

I had an appointment to see the psychologist and encountered much difficulty getting off on his floor because of a malfunctioning elevator. At one point I disembarked briefly in a between floors room, where I said to myself, "What am I doing here?...I don't belong here." Eventually reaching the psychologist's office, I related my between floors adventure to him. Suddenly the statement about "not belonging here" seemed to hold hidden significance and I realized it referred to his office. At this point I awoke.

Seeking the meaning of this dream, I recalled that the same psychologist and eccentric elevators appeared in two dreams five years ago (and never since then) when I was deciding to leave his group and enter graduate school. A similar major change is currently anticipated in my life as I prepare

to leave graduate school and enter the working world. When I noted the relationship between these dreams, years apart, I became aware that the psychologist's office in the latest dream was a distorted version of the graduate offices at Portland State University where I am a fourth year student amongst first and second year students.

This critique of the methods applied in this study to test the hypotheses is not meant to detract from the value of the data collected, but instead, is intended to point out weaknesses and to suggest new directions for future research. In addition to the interesting results obtained here pertaining to stylistic differences, the dream reports together with the personality and associative data, contain a wealth of clinical information for further analysis.

Recallers and Nonrecallers

Failure to recall dreams has been attributed variously to: factors affecting memory consolidation; awakening interference; salience of the dream itself; repression; lack of motivation to recall; low receptivity to inner life events; low ego strength; low anxiety; and high anxiety (Cohen, 1974b; Domhoff & Gerson, 1967; Farley, Schmuller, & Fischbach, 1971; Freud, 1900/1965; Giora, 1973; Hiscock & Cohen, 1973; Reed, 1973; Tart, 1962; Wolpert, 1972).

There were stylistic differences in REMPs, dream

recall, and response to the laboratory situation between Recallers and Nonrecallers in this study. Similarities within Recallers and Nonrecallers on these dimensions seemingly overrode any potential influence of the presleep condition to which they were exposed. These differences offer validity to the self-report method of distinguishing these two groups, bearing in mind the criterion of at least once-a-week home dream recall for Recallers and not more than once-a-month for Nonrecallers.

As might be expected, the volunteers for this study, Recallers and Nonrecallers alike, were motivated to remember their dreams. On the Sentence Completion form, nine dreamers indicated they had volunteered in order to discover more about themselves through their dreams. The other three (one Recaller and two Nonrecallers) participated "to help out a friend," "because I wanted to contribute," and "because I enjoy this secretive, at night kind of experience." The fact that Nonrecallers remembered their dreams in the lab as well as Recallers (83% to 84%) probably resulted from this high motivation and optimal awakening conditions for recall. The two dreamers who had 100% recall on all three nights were a woman Recaller and a male Nonrecaller. On Night 2 Nonrecallers had 10% better recall than Recallers (94% to 84%).

It is speculated that once a person has defined himself or herself as a Recaller some anxiety is aroused about

living up to this expectation, which may, in fact, contribute to less recall. Nonrecallers, having no such reputation to uphold, are more relaxed and consequently more successful. Also, the novel experience and reinforcement of recovering more dreams in one night than in four months or more at home, possibly would increase the initial motivation of Nonrecallers over Recallers. This is consistent with findings by Reed (1973) that Nonrecallers improved more than Recallers in amount of dream material retrieved in a three-month study. Greater motivation also might explain spontaneous dream reporting of Nonrecallers from NREM sleep, although the number of occurrences (3) is too small to be other than suggestive.

Findings that Nonrecallers had significantly fewer REMPs on the baseline night than Recallers is unexplained and inconsistent with previous studies (e. g., Antrobus et al., 1964; Goodenough et al., 1959) which found no difference. On Night 1 only two of the Nonrecallers ($\underline{n} = 5$) had as many as four REMPs, and none had more than four, while five of the Recallers ($\underline{n} = 6$) had at least four REMPs, two having five REMPs, and two having six REMPs. On later nights, although the total time spent in REMPs by Recallers ($\underline{n} = 6$) and Nonrecallers ($\underline{n} = 6$) decreased from the baseline, the number of REMPs experienced in a single night increased. All dreamers had at least four REMPs on Nights 2, 3, and 4. By Night 4, three of the Recallers and two of the Nonrecallers

had six REMPs. One interpretation of these findings would be that interruption of REMPs by the experimenter and time spent in making dream reports would result in loss of sleeping time and a proportionate loss of REMP time. The increase in number of REMPs would then be seen as an effort to compensate for the interruption of REMPs, and similar to the increase of REMP attempts by subjects of dream deprivation studies (Dement, 1960). Nonrecallers seemed to be more persistent and successful at regaining REMP time than Recallers, since five of six Nonrecallers went into REM state immediately following dream reports on a total of 17 occasions and Recallers always entered NREM sleep after making reports. This is particularly interesting, considering that Dement has stated:

once an interruption of a REM period has persisted for longer than about five minutes, there is a virtual certainty (95 to 98 percent of all instances) that the next REM interval will not take place for at least thirty minutes. (1972, p. 36)

This habit of Nonrecallers resulted in more interruptions of REMPs for them (115 awakenings to 91 for Recallers) and incidentally more dreams collected from them. At the same time, Nonrecallers were actually spending more of the night in the REM state by Night 4 ($\bar{M}$ = 1 hour, 8 minutes) than Recallers ($\bar{M}$ = 1 hour, 6 minutes) as compared with 1 hour, 19 minutes for the average Nonrecaller on the baseline night and 1 hour, 42 minutes for the average Recaller. In summary, Nonrecallers seemed to have more ability to repossess lost

REMP time than Recallers.

REMPs became shorter on the average during the week, i. e., dreamers made gross body movements during REMPs, necessitating awakenings by the experimenter before the scheduled time. This is consistent with preliminary findings reported by Fiss (cited in Cohen, 1974b), who suggested that shortening of REMPs after several nights of interrupted REMPs might represent a conditioned avoidance of the awakening stimulus. Adapting this explanation to the present findings, it might be speculated that Nonrecallers found being interrupted from REMPs more noxious than Recallers did. Fiss suggested that Nonrecallers may be used to awakening at home from NREM sleep in order not to interrupt dreams.

The qualitatively different kinds of nonrecall (i. e., contentless reports of dreaming vs. dreamless reports) distinguished Recallers from Nonrecallers. In the present study, when dreamers failed to recall a dream upon awakening from a REM, Recallers tended more often to feel they had been dreaming while Nonrecallers tended to feel they had not been. It has been suggested that contentless reports of dreaming are connected with anxiety-evoking dream content (Shapiro et al., 1964; Witkin, 1969). It might be assumed then that Recallers have more manifest anxiety than Nonrecallers, as found by Domhoff and Gerson (1967) and Tart (1962). On the other hand, a simpler interpretation is that Recallers, having more reference points to their own past

dream experiences, might more readily recognize the after-feeling of dreaming even though the content is unavailable, than Nonrecallers.

Complaints of physical discomfort during their nights in the lab were more prevalent for Recallers than Nonrecallers, lending some support to the theory that Recallers are high anxiety Sensitizers and Nonrecallers are low anxiety Repressors (Cohen, 1974a; Tart, 1962). Four of the six Recallers experienced at least one of the following: extreme bladder discomfort; heavy perspiration; backache; a wrenched knee; vomiting; being too cold or too hot; or the pillow or bed being uncomfortable. Only one of six Nonrecallers expressed any discomfort; on Night 1 before going to sleep Dreamer 7 complained of being allergic to the sheets. Differential effects of the laboratory situation on dream content of Recallers and Nonrecallers are considered in the following chapter.

POSTHOC ANALYSES

This experimenter became convinced during the course of this research that some evidence of general incorporation of waking experience and specific transfer of the controlled presleep event to dreams was not being captured by the analytical methods employed.

Davis (1974) points out that

the ordinary rules of logic and the scientific method itself should be suspended . . . when the method so turns in upon itself that by adhering to it, we cancel out whole chunks of experience, the experience even of the scientist (p. 31).

It seemed appropriate, in addition to the experimental approach already undertaken, to use a phenomenological approach whereby data from the post-dream associative session, case histories, dreams in series, personal context, and reactions to the experimental situation could be combined in search of meaningful patterns.

Effect of the Meshes Film and Slides

A small case study. As an example of the phenomenological method applied to a particular dreamer and in the interests of preserving some of the individual flavor of this study, the following protocol is offered.

Dreamer 8 was atypical in several respects, being the only dreamer in this study who: (a) had direct incorporation

in a dream of an essentially unchanged scene from the pre-sleep stimulus, in his case the Meshes slides; (b) did not recall any dreams on the night of the presleep event (out of six REMPs), although he recalled five dreams on Night 2 and seven on Night 4; (c) did not have any overt dreams about the experimental situation (he had one tentative symbolic reference); and (d) took 88 minutes to get to sleep on Night 1; Dreamer 1 took 60 minutes on Night 1, otherwise it took dreamers from 2 to 30 minutes to fall asleep every night.

Dreamer 8, a Vietnam veteran who had flown many combat missions, told the experimenter he suffered from high blood pressure and hypertension. He felt he held in his emotions too much, saying "I wish I had a stick that I could just push and let it all out." He revealed more anxiety in the experimental situation than most dreamers, worrying about getting to sleep in the lab, about remembering his dreams, about the experimenter trying to influence his thoughts on Night 3, and about not reporting any emotional content in his Day Reports. After seeing the Meshes slides on Night 3, his mood change was dramatic, with an Expected-minus-Unexpected score of 69.9 points, as compared with an average of 38 points for dreamers in his group (II) and an average over all Meshes viewers of 20.8 points.

At home he remembered his dreams less than once a month, yet the night before he began sleeping in the lab he dreamed someone was trying to kill him, and during a daytime

nap following Night 2 he dreamed that a car containing his sister crashed and went up in flames. On the Sentence Completion form he revealed that his waking fantasies were about war.

It is suggested that this dreamer fits the model presented by Whitman et al. (1962) and Breger et al. (1971, p. 163), of the dreamer who defends against anxiety by repressing dream recall. This defensive effort was indicated on Night 3 when he did not remember dreaming at all upon being awakened from six REMPs. This effort failed for Dreamer 8 on the last night when he had several terrifying dreams, including the one incorporating Meshes content. Excerpts from his Night 4 dream sequence follow:

REMP 1

Well.....seems as though I was in an automobile and...I think it was a convertible...but just what I was doing there...I don't remember that much.....I think I was by myself.....(E. How did you feel?)..Oh...good...I used to like to ride around in a convertible...if I had one I still would....

REMP 2 (a)

I don't recall who the characters were, but it was something about a man and he was a....a deaf mute..and according to what I recall, this man was doing pretty good at what he was doing, even though he was...had such a handicap...and...I don't remember who any of the characters were.... (E. Setting?).....oh..the setting was indoors...like it was just a...casual conversation over a cup of coffee or a cup of tea.....

REMP 2 (b)

I just remember another short dream I had... wasn't much..but it takes place in downtown.. Portland...all I remember about it is this large car...right in the middle of an intersection and it's got the traffic blocked..going east to west

..and the traffic going north to south is restricted to one lane of traffic and there's no one in the car...the car looked like an extra large Cadillac, sort of two-tone yellow and white...it was as though I was observing this from the sidewalk...I don't see any pedestrians, but there's all kinds of cars, all tied up because of this one, and there's no one in the car, it's just sitting there, no lights on it....

REMP 3

.....I'm trying to remember what that thing was...I remember a lake and...I can remember myself..and my sister and another girl..and we were looking for something...that possibly..had been thrown away into the lake...and..we noticed on one bank of the lake there was a camera..like professional photographers would use...I don't know where the owner was, but I wouldn't leave a camera out like that...and we were just sort of looking along the bank of this lake trying to figure out how this....this object....had possibly gotten into this lake, like maybe we could find some tracks or something there...but we couldn't find anything...and then I had another dream...well, it's probably related to this same thing...but I was driving this school bus, I was awfully cold, in the dream, and I wished I had dressed warmer...I possibly drove out to that lake...and we're looking around this lake.... somehow I knew what I was looking for but we just couldn't find it...it was a fairly large object, it would take at least two men to move it...it was encased in wood, looked like an oversize sewing machine..great big thing...or maybe a good sized organ...uh..electric organ, you know... the wood did not have a good finish on it...like it was left out or weatherbeaten...just when you woke me up we were out....I think in a wooded area and we just came across that or something like it....and I was just trying to figure out exactly what that thing was...when I woke up... it was in the fall of the year...or approaching winter, cause all these deciduous trees had lost their leaves....(E. Emotion?)....just sort of a curiosity.

Non-REMP (dreamer spontaneously awoke)

O. K., I'm back out in the woods again but I'm sure it's under different circumstances....uh...

o.k., I'm with my girl out there...let me put it this way, I come across my girl...she's..uh.. doing something in the back seat of her car and there's a guy in the front seat...who...is a stranger to me...and I don't know exactly what she was doing in the back seat cause I was outside the car....and...this other guy and myself, we aren't getting along at all and...a short time later... they drive off...it's her car, she's driving and he's riding, and the last thing that I remarked was that she had some explaining to do....and I was...I suppose jealous...or...disgusted...

REMP 4 (heavy, irregular breathing)

....I was sitting alongside a road, a dirt road, and this old man was walking two horses, a brown horse and I guess it was a palomino and he walked them up a ways, turned them around and walked them back and...I was close enough where I could pet one of them if I wanted to, very close as a matter of fact, and his front legs got by me o.k. and I was gonna...uh..he had a large flank..well, all horses do, you know...I was gonna slap him.. well, just sort of pat the horse there...and then the horse starts walking on me...and here I'm yelling to this old man, "Get your horses off of me!" and he doesn't hear a thing until I'm actually under the horse and then he can see for himself...so he must have been pretty hard of hearing and...I didn't get hurt, but I was definitely scared....

A few minutes later

That was just a continuation of something that happened before...that dirt road that I was sitting on lies behind a fairly good size house and...my girl friend and another girl are living there or staying there and a boy friend and myself go over to this house and...my girl friend takes off...she just leaves the room...and there's a fireplace and there's a fire in the fireplace...and there's some wood next to the fireplace and a piece of that wood caught on fire, and I walked over to the fireplace, pulled open the wire mesh and threw this other log in the fireplace, closed the wire mesh back and.... left, by myself, I walked out behind this house and that's when I sat down next to that dirt road..... it was kind of strange...there's something I don't understand, why I'm not talking with my girl friendI couldn't understand how she could afford something like that...it was a fairly large house...

REMP 5 (heavy, irregular breathing)

....I was sitting in a room and next to this room was a completely dark, unlit room, this other room was quite a bit smaller...but in the room I was sitting in, I was showing, I believe, a friend some of my photographs...and I had recently come back from a trip in Arizona and was showing pictures of...oh, Mexico and Arizona and as soon as I got to Tombstone, I came across a photograph that I had taken of Boot Hill...and at the same instant that I realized that it was Boot Hill I can distinctly remember hearing that exact same music that the recorder played for me the other night (soundtrack of the Meshes slides on a tape recorder)...it was the same exact...it was...I think it was a bass...fiddle or a bass violin, someone was drawing that...making those deep strings really sound..and I know it was exactly that same sound..and at that same instant in this other dark room, here was this woman, looked like she was strung from the ceiling, she had a red short-sleeved shirt on, she was on her back, and it appeared to be that woman that was going out the window (in the Meshes slides)....and then I woke up.....that's as close a duplication of anything I've ever dreamt...that sound had to be the exact sound...as far as that woman, she resembled that woman in that slide, I don't know if it was the same one or not..but the one I dreamt had a red short-sleeved shirt on, maybe that represents that she got her throat slit...it looked like she was suspended from the ceiling by wires...I didn't see the wires, but that's the only way they could do it...she was lying on her back, her arms were thrown out, her head was thrown back, and her mouth was open...and it scared me, I mean, I had these chills..the first thing, I had these chills run up and down my spine..as soon as I heard that music and then..an instant or two later was when I looked in this room and there was a spotlight on this gal and that made me scared even more....

REMP 6

....I was out flying this time and I had some problems so I had to sit the aircraft down and it was just north of the river...there was another pilot..there were two aircraft...we...rearranged some equipment that was sitting in the field and the farmer that owned the equipment didn't appreciate our gesture at all...we just wanted a little stand

to stand up onto so we could get a better look at the aircraft....seems we all had parachutes on... I don't know why...we never carry parachutes when we're flying helicopters....it was really kind of funny....I opened up my parachute and I was running back and forth, dragging my parachute, trying to fill it full of air..so I could fly out of there with my parachute, like a parasail...but I drug it through the bushes and ground so bad that it was cut to ribbons so that all I had on was my harnessthe parachute had disintegrated or disappeared....

The waking life conflict with his girl friend revolved around Dreamer 8's ambivalence about marriage. The relationship had cooled off and she had recently begun to see other men. Dreamer 8 was considerably upset in the association session when he realized the red short-sleeved shirt of the REMP 5 dream reminded him of his girl friend's favorite dress. The experimenter sought to allay his guilt feelings by suggesting that he had combined features of the Mesher woman with his girl friend because of similarly strong feelings of sympathy for both.

Material for additional interpretations of Dreamer 8's protocol exists in his associative data, but in the interests of preserving his anonymity, are avoided here. It is left to the reader to speculate as she or he wishes, since numerous leads are present in the dreams themselves.

Nightmares. Dreams of nightmare proportions are rarely reported in the laboratory. Yet in this study, in addition to dreams of REMPs 4 and 5 of Dreamer 8, nightmares were experienced by three other dreamers. A combination in all three cases of threatening theme, fear aroused

in the dreamer, and transformation of Meshes symbols strongly suggest incorporation.

1. Dreamer 2 in Group I dreamed (Night 4, REMP 1) she was an escaped prisoner in a concentration camp, being hunted by men who wanted to kill her. She was defending herself with a gun which shot daggers. Suddenly she was in a bed under the covers and she hid her gun, which had one dagger left, under the mattress. Just before she awoke the head of the camp leaped into the room, raging and screaming.

Interestingly, during this dream report the tape on the recorder ran out and while the experimenter changed it, Dreamer 2 had another brief dream. A person from her recent past, a heavy set nun who usually wears a white habit, appeared in the dream tall and slender, dressed in a black habit and eating an ice cream cone. She gave the dreamer a "very nasty look." Dreamer 2 had believed the blackrobed figure in Meshes to be a nun until it turned and revealed its mirror face. The Meshes figure represented something evil to her. In her waking life she regarded the nun as a threatening, negative power.

2. Dreamer 5 in Group II dreamed (Night 3, REMP 2) she was watching her mother rehearsing for a part in The Little Foxes, a "scarey, scarey play" by Lillian Hellman. At this point she received a gift package containing either a necklace or earrings from a man she has felt threatened by in her waking life. In the association session Dreamer 5

revealed that most plays and stages, in particular, are frightening for her. She once appeared in a Lillian Hellman play, The Children's Hour, in which a woman commits suicide because of a child's lies. Dreamer 5 recently watched The Little Foxes on television to determine why she was so frightened by it. The gift jewelry she associated with a garnet necklace she wears. It also frightened her when she first received it. Before going to sleep on Night 3, this dreamer was quite annoyed about being "purposefully and unnecessarily frightened" by the Meshes slides.

3. Dreamer 7 in Group II dreamed (Night 3, REMP 4) he was in a store looking at earrings with a friend when a woman showed them a picture of a sloth (later determined to be a platypus) she wanted to sell. The dreamer began to feel frightened at this point, because the animal had "great big claws and its mouth was a great big bill and usually in dreams when there are things like that they are going to get you." The scene shifted to the woman's house. When the dreamer heard a strange noise and saw the animal coming down a dark stairway, he turned and ran out the front door into "pitch darkness," carrying the bill of another platypus in his hand. He flew at great speed up into the air to escape danger, "feeling queasy in the stomach." In the air he put the bill over his eyes and saw psychedelic designs which caused him to tumble headfirst toward the ground. He described the sensation as amazingly real, like falling in a

roller coaster or jumping off the high dive. This dream is reminiscent of the falling scene on the stairway in Meshes.

In a childhood nightmare, this dreamer was frightened by a robot with "strong, mechanical claw-hands." On Night 4, Dreamer 7 was scared in a dream when he received a claw-like pinch from an invisible "spectre." Of interest here is his reference to the blackrobed figure in Meshes as spectre-like.

Incorporation of peripheral elements. Evidence of incorporation appeared as peripheral elements in other dreams. The strange, bulbous, darktinted goggles worn by the Meshes woman in one threatening scene may have been responsible for a significantly larger number of sunglasses appearing on Nights 3 and 4 in dreams of Groups I and II (five dreams) than for Group III (one dream). No dreamers mentioned sunglasses in dreams of Nights 1 or 2. Dreamer 1 dreamed of sunglasses lying on a flowered couch; a flower patterned overstuffed chair is an important element in Meshes. Other objects looked through by dreamers (binoculars and the platypus bill) may have been transformations of the sunglasses symbol.

Being seated at a table with other people eating bread and cutting bread with a knife occurred in several dreams containing death symbols, of Dreamer 3, who spontaneously mentioned the coincidence with Meshes. Dreamer 2 dreamed that while demonstrating sewing techniques to relatives, she

kept interrupting her work to attend to an old-fashioned phonograph which was playing in the background.

Symbolic incorporation. Some latent relationships between Meshes symbols and dream symbols were discovered by conducting a film inquiry and an association session with each dreamer. A few examples follow:

Dreamer 6 revealed a particularly subtle relationship. In describing the Meshes slides he said,

The surroundings were open in the beginning and then it kind of closed down as she went inside . . . there was a veil over things, like the veil over the window . . . and several times she was thrust up against this veil and she couldn't get through.

Of interest is Dreamer 6's use of the word "vale" later in the film inquiry when he described the young woman's pursuit of the blackrobed figure, who represented to him "a possibility" or a messenger,

whenever the young woman either came to the vale or the point of no return, she just kind of changed her mind and contemplated something else.

Dreamer 6 was impressed by the stark setting and contrast in the slides, "like the black dress and black cloak contrasted with the white walls and white walkways," and "the high white contrasting lighting." The first dream he recalled on Night 3 (REMP 4) was set "in a room that was in the top of a house...there were a lot of hanging things, like fishnet partitions." Associating to the dream later, he mentioned the high contrast, a woman wearing black

clothes, a huge white cigarette, a calico dog, a black and white cat, and the fishnets standing out against the dark room. In his next dream the setting was "a negative of my house," with the windows and rooms being the reverse of their real position and the house cream-colored instead of dark. During reports of both dreams he stressed a feeling they were connected with Meshes, but he didn't know in what way. In his first dream of Night 4 (REMP 3) two rooms were separated by a curtain covered with cobwebs, which he partially removed, leaving up the large ones. He felt later it was a division, separating a part of the dream from something completely different.

Death was a potent symbol in Meshes. Three dreamers in Group I handled this theme quite differently, both in their dreams and in their reactions to the film. The black-robed figure symbolized death and evil to Dreamer 2, a Doppelganger, or double, to Dreamer 3, and the classic figure of Death to Dreamer 4. The poppy also represented death to Dreamer 4. The other self with the knife represented the self-destructive side of the young woman to Dreamer 3.

Dreamer 2 (Night 4, REMP 4) had two dreams dealing with divorce; in one Elizabeth Taylor is sitting on one side of a bed and on Richard Burton's side is laying a dark blanket resembling a grave. In the second dream children of divorced parents are suffering, hungry for both food and attention. Dreamer 2 revealed later that three of her friends had

been recently divorced and her own parents divorced when she was a child. She felt divorce symbolized a kind of death, "the partner is gone, something has died."

Dreamer 3 had two dreams on Night 4 (REMPs 2 and 4) with death references. In the first she is in a cemetery and sees a "crude approximation" of a highchair, which is a tombstone for a baby's grave. When a photograph of it is shown in a later group discussion, she states that it is a symbol of caring for dead babies rather than the real emotion. In the other dream a friend from her high school days is wearing a necklace of tea strainers, egg slicers, and cheese cutters, "they are a great big knot at her throat." (The reader is reminded of the last scene in Meshes in which congealed ropes of blood are strung across the throat of the young woman; and of the dream of Dreamer 5, already mentioned, in which a piece of jewelry reminds her of a frightening garnet necklace). Dreamer 3 has a small covered bowl, "maybe it's around my neck," containing a rosary made of Job's tears. People wonder if she knows someone who has died and is going to pray for them. The dreamer actually does wear a cross with one decade of the rosary about her neck. She also owns a rosary with many medals clipped to it, which she used in the past when praying for the dead.

Dreamer 4, who recalls only three or four home dreams a year, had a dream in the laboratory (Night 3, REMP 4)

which he had twice before, with minor alterations, in the past three years. In it the dreamer is making a long and perilous journey through a snow-covered landscape, with a burly woodsman, a complaining woman, and a lion cub. At various times the dreamer takes on the roles of all these characters. A supernatural voice repeats a prophetic verse throughout the dream, something like: "Start out in August morn and in cold December a tired man will come walking home." They are carrying lots of canned food which they eat from time to time "to lighten the load." Dreamer 4's associations to this dream were: (a) a dream he had several years ago in which he is being mocked by Peter Pan and the same prophetic voice proclaims, "You will die like Peter Pan at an early age, on December 21st," followed by a flash of a newspaper obituary headline "Born...Died," and then an ancient Egyptian funeral procession; (b) his childhood fantasy of being a lion which he often acted out in play; and (c) his birthdate in August.

Effect of the Erosion Film

Not surprisingly, elements from the Erosion film appeared in dreams of Group III. Dreamer 12, who related erosion to changes in people over time, dreamed about Joan Crawford and Bette Davis "looking old as hell" (Night 3, REMP 4), about the mother of a high school friend behaving seductively toward him (Night 3, REMP 4), about old people

in Miami (Night 4, REMP 2), and about a woman of 80 sounding like a 30-year-old over the telephone (Night 3, REMP 5).

His associations were: reading an article about Joan Crawford keeping up her youthful appearance; his own mother working hard to maintain her good looks; Peter Simon's photographic distortions of old people in retirement; and the film, Harold and Maude, in which a 21-year-old man and an 80-year-old woman fall in love.

Other symbols in dreams seemingly influenced by Erosion were: a water fountain with ice in it and an ice skating rink changing into a swimming pool (Dreamer 12); an earthquake and four floods in two dreams of Dreamer 10 on Night 3, undoubtedly influenced in part by a lunch hour conversation about Alaskan floods and a mishap at work that day in which a pipe burst and flooded some equipment; logs falling off an earth-filled dam into a pond and then moving back up the hill and repiling themselves like a film in reverse (Dreamer 10); a large plaza with layered cement areas "like a sculpture" and a sculpture made of solidified sludge (Dreamer 9); and taking photographs from an airplane (Dreamer 10).

Effect of Other Films

Films other than the experimental ones were incorporated in dreams. Just before coming to the lab on Night 3, Dreamer 7 saw McCabe and Mrs. Miller in a movie theatre.

He anticipated it would influence his dreams. In REMP 4 that night he dreamed he was making love to a young woman who had been a minor character in the film.

Although not consciously impressed by a documentary film on Eskimo life she saw in an anthropology class two years before, Dreamer 9 recognized two scenes from the film in a dream of Night 3. This dream seemed to be a creative attempt to solve family conflicts. Many of Dreamer 9's dreams during the study indicated considerable tension in her relationships with her mother and her siblings. In the dream an Eskimo family visit her home, teaching the family to relax by dancing and eating with their fingers. Later the dreamer watches them float on a raft down a river which flowed through the kitchen.

Dreamer 10, whose adventure-laden dreams in the lab included fighting a space war with ships on a movie screen, killing Indians, participating in a commando raid, and rescuing prisoners in the Orient, reported that these and other scenes were recreations of movies seen in his past. Associations were to Alan Ladd and Errol Flynn films, Bob Hope comedies, Harold and Maude, Sands of the Kalahari, Kotch, and a Russian film, The Red and the White. He observed,

Movies have a very profound effect on the way people relate to what goes on around them...instead of taking a sense of how to relate from their family and community and directly from real

experience, they'll take it from a fabricated one...movies are high gloss, it's so vicarious, you can just sit there and live a life, right there on the old screen, and up until the time that The End sign comes, boy, you are those people and you're afraid when there's danger and you're happy when they are.

Effect of the Experimental Situation on Dreams

Dream content related to the experimental situation is of considerable interest in the present study: (a) as an example of the incorporation of a controlled day experience into the dream life of the subject; (b) as another way of looking at how the individual dreamer processes the anxiety and physical stress engendered by the experimental situation; and (c) as an interaction with anxiety aroused by the presleep stimuli.

Numerous dream researchers have been interested in the effect of experimental conditions on dream content: to gain insight into the motivation, anxiety, and defenses of dream volunteers (Breger et al., 1971; Whitman et al., 1962); to resolve methodological issues of whether or not laboratory collected dreams can be considered typical (Dement et al., 1965; Domhoff & Kamiya, 1964b; Hall, 1967); to corroborate differences between recallers and nonrecallers (Witkin, 1969); and to study transference attitudes of the subject toward the experimenter (Whitman et al., 1963; Witkin, 1969).

All researchers agree that the experience of having

one's dreams collected in a laboratory setting is an important contributing factor to the content of these dreams.

Perhaps the reasons are most succinctly summed up by Breger et al. (1971):

Being a subject in a dream laboratory has proved to be one of the most potent, albeit unintentional influences on dream content. A laboratory subject is connected to an impressive electrical apparatus and sleeps in an unfamiliar setting. He is in the hands of an experimenter who remains awake and in control of the situation. Perhaps most important, the laboratory situation involves having one's mind probed, and exposing a large amount of dream material that one is normally unaware of. (p. 23)

Whitman et al. (1962) observe that the extreme anxiety of being in a new situation may be displaced onto the room and surrounding objects. The reaction of the subject may also include fears about his or her performance in the study, second thoughts about being a volunteer with subsequent guilt, anger, and suspicion directed toward the experimenter, and feelings of passivity and humiliation, particularly on the first night (Dement et al., 1965). On the following nights the rapid evolution of feelings about the experimenter, due to the large, concentrated amount of time spent together and the intensely personal nature of the relationship, may result in the subject fantasizing the experimenter as parent, sexual object, therapist, and so on (Dement et al., 1965; Witkin, 1969, pp. 330-331).

In the present study the experimenter attempted to establish a relationship with the dreamers of relaxed,

casual friendliness, with a detached interest in their dreams. Every effort was made to alleviate anxieties by explaining beforehand the function and safety of the recording equipment and electrodes, reassuring them about the privacy of their bedroom, warning them of possible noises from the night cleaning crew in the halls and the air conditioning system, and explaining the procedures for going to the bathroom if necessary and their ability in the event of sound equipment failure or other emergency to get out of bed to knock on the window between the rooms or to unplug the electrodes. The presence of fine-gauge copper wire attached to two walls of the room (an unfinished Faraday cage, begun to minimize interference with EEG signals and later found unnecessary) was explained and the observation made that it had decorative value and possibly a calming effect on the atmosphere of the room. Specific anxieties and discomforts were dealt with as they appeared. A bedspread was added to the drapes to control light leakage from the recording lab for one dreamer. The blanket was doubled, untucked, or taken off according to individual preferences and placed under the sheet for one dreamer who complained that he must be allergic to the mattress.

Nevertheless, there were many waking and dreaming comments upon the threatening and annoying aspects of the experience. Dreamers 7 and 8, both men, mentioned the film Clockwork Orange, during preparations for viewing the slide

show on Night 3, indicating that they identified in some fashion with the main actor who is strapped in a chair, electrodes attached to skull and eyelids taped open, for an aversive conditioning procedure. Dreamer 5 asked if this experimenter could tell what she was dreaming by watching the machine. Dreamer 12 revealed that as he was falling asleep on Night 1 and attending to his hypnagogic imagery, he suddenly thought, "uh oh, she's looking inside my head!" Dreamer 10, before he fell asleep on Night 3, made a gesture with his hand known as "flipping the bird" and asked this experimenter over the intercom if it had appeared on the paper record. Dreamer 11 imitated the experimenter's voice awakening her over the intercom, describing it as "weird and frightening" and "like God's voice." Most of the dreamers expressed surprise at the large number of electrodes (9), and concern about being able to get to sleep, to persevere for four nights, and to recall their dreams.

Several dreamers produced explanations for their failure to recall dreams, based upon the laboratory conditions. Dreamer 9, a Recaller, felt her dreams in the study, except for those on Night 1 when she woke of her own accord, could not be "real accurate representations, because of the conditions it's under...it really put me under a strain." She blamed her fragmentary dreams on extreme fatigue from interrupted sleep and on self-consciousness, particularly about being tape recorded. Dreamer 6, who was also a

Recaller, felt his physical restrictions in the bed and his anxieties about pulling the electrodes loose caused his low recall record (50%) and even restricted activity in his dreams. He often ended or interrupted REMPs with large body movements and when the experimenter told him that failure to recall has sometimes been attributed to such body activity, he likened it to an Etch-a-Sketch toy, "when you jiggle it the picture disappears." In contrast, Dreamer 11, a Nonrecaller, felt her state of mind, chronic depression and a low self-image, was responsible for low recall, observing that "apparently I've been repressing material even in my dreams."

A dream spontaneously reported by Dreamer 9 after the first REMP of Night 1, best illustrates the anxieties aroused by the experimental situation and their interweaving with more permanent anxieties:

I dreamt that I was in this room and I was laying down for the dream study and Ray (her boy friend who had walked with her to the lab that night) was going to stay here with me, so he got in the bed with me...and it wasn't like I was dreaming, I really thought I was awake...and for some reason, I had to wake up in the middle of the night and go to Pendleton, which is where my dad used to live... so I left and then I was going to come home that night so I could finish this dream study thing with you and I thought you might be upset because you wanted me to have eight hours of uninterrupted sleep (laughs)...and I was having a hard time getting home ...I started home in my car and when I came to this part I wasn't in my car anymore...I had to walk and I had to go through somebody's backyard and there were all these garbage cans and stuff and I had to climb on top of them...before that I was talking to you and you were telling me how to get through, that you had to take the same way once and you had to climb over about 15 garbage cans...and so I was doing that and all the tops were pounded in from

people stepping on them...and so I stepped on about 12, trying to get over this big obstacle and then these people came out of the back of their house where I was and asked who I was... and I was telling them I was the friend of someone...the man looked like a man who's a janitor here (the building in which the dream lab is located).....(E. What were your emotions in the dream?)..I was kind of worried that I shouldn't have gone to Pendleton...I think I was kind of afraid I was going to get caught...yeah, I was....and afraid I couldn't make it, too, I was kind of afraid because it was really hard to climb up them...

Associations to the dream three weeks later:

I was really anxious about it (the dream study) ...I was anxious that I wouldn't be able to remember my dreams and I was really self-conscious in front of the tape recorder like I am right now....and I was also a little bit intimidated by you, too, I think.....the backyard reminded me of a setting I always have in an awful lot of my dreams of climbing up a hill from some backyard of houses I've lived in...and I'm always climbing up...having a hard time getting up... or getting lost or something...(E. Do you feel in your life that you're struggling against anything, trying to get to some goal?) Yeah, I really have a pessimistic attitude about life and I make it hard for myself and I always put obstacles in my own course....(E. Associate to being afraid you were going to get caught.) I remember that I was always...you know...hiding myself...mostly from my mother...I was afraid of her, I was always afraid I'd get caught at something, you know....(E. Cause how would she act if she caught you.....angry?) Yeah...it was really weird...I mean, it wasn't necessarily something that I was doing wrong, it was just my attitude that I was afraid of her that made her angry at me...so I felt like I was helpless, there wasn't anything that I could do...if I was nice or anything, she'd still be mad at me, simply for the fact that I was afraid of her.

In this dream, it would appear that anxieties about her performance in the dream study and the fact that the experimenter was an older woman interacted with long-standing

fears of her mother and the dreamer sought refuge with her father, as she did in the past, and with Ray, her "security blanket" in the present. There are also indications of fears about exposing her dream life to others, symbolized in the dream by being caught in the backyard of a janitor whom she may have assumed would be in the hall outside the dream lab during the night.

This same dreamer on Night 3 (REMP 3) dreamed that her mother came to visit in her apartment and noticed a rather messy experiment in the middle of the rug and

a cheap mystery novel lying on the couch...it had a really gory picture on the front...a man with a terrified look on his face....she doesn't like to see gory stuff like that lying around and she thought I was reading it and she was going to give me a lecture.

An interesting association the dreamer later made to the mystery novel cover was: "It was like a painting I've seenby some famous guy...it's called The Dream, I think...or, no, it's called The Scream."³ Earlier in the same dream she put on a performance for her mother and sister.

I was half-embarrassed because my mom and sister were watching me on stage...and I wasn't that sure what I was doing...I think I was kind of afraid my mom and sister wouldn't understand what the play was about really...they'd get the wrong impression.

Associations:

That was really symbolic...cause that's just

³Usually translated The Cry. It is by the Norwegian, Edvard Munch, the first Expressionist painter.

exactly what it is like...it's like I'm just putting on a big play, a big front for my mom ...she doesn't know how I really live and feel...

The first dream (Night 1, REMP 1) is an excellent illustration of the manifest content of a dream being dominated by the experimental conditions and the second dream (Night 3, REMP 3) illustrates a case in which symbolic or latent content is partially influenced by experimental conditions.

Comparisons of the percentage of dreams influenced by the experimental situation reported in various studies is complicated by different categorization methods. Hall (1967) in a study with 15 subjects and 559 dreams reported, considered only those dreams with overt references to the laboratory setting, electrodes, EEG machine, experimenter, being a subject in a dream or sleep investigation, telling someone about being a subject, being awakened to report a dream, doing research on dreams, and sleeping in a laboratory. Mention of bed, sleep, other machines, experiment, or psychologist was not sufficient by itself to score as a laboratory situation dream. Only one score was given to a dream containing experimental situation content, regardless of how many separate references to it were made.

Hall classified overt dreams as Whole, Part, or Detail, depending upon whether or not the entire dream, one episode of a dream, or a minor detail was concerned with the experimental situation. He found 14.1% of the dreams in his study

(1967) contained some feature of the experimental situation. This percentage was reduced to 6.2% by eliminating data from: four subjects who were "highly involved" with the experiment (dream experimenters themselves); the Detail category; and Whole and Part dreams with innocuous content.

Domhoff and Kamiya (1964b) collected 163 dream narratives over 10 nights from eight women. Using essentially the same criteria as Hall, they considered only overt experimental situation content, without any further breakdown of the category. They found 30% of the dreams contained at least one reference to the experimental situation. Unlike Hall who did not include data from the first seven "adjustment" nights in the lab, Domhoff and Kamiya included dreams from Night 1 on and found no difference over nights as to incorporation frequency of laboratory situation content.

Dement et al. (1965), who pooled data from three laboratories for a total of 77 subjects with 813 dreams, classified experimental situation dreams as Complete (comparable to Hall's Whole category), Partial (a combination of Hall's Part and Detail categories) and Inferential, "the dream contains elements that appear to represent some aspect of the experimental situation in a thinly disguised manner" (p. 121). They scored 21.9% of the dreams in the Complete and Partial categories and 15.4% in the Inferential category. Since they had no associations to the dreams from subjects, they did not consider the latter percentage as conclusive.

They reduced their overt incorporation figure to 18.7% by excluding dreams of Night 1, since it was an adaptation night with much higher incorporation, and they found that habituation to the lab situation changed little after that night.

Whitman et al. (1962) dealt with two categories, Direct and Disguised and found incorporation of experimental situation content in 68% of the dreams (111) of 10 subjects over four nights, excluding Night 1. Of this total, 32% were Direct and 36% were Disguised. Their results may have been confounded by the administration of drugs (a sedative, a tranquilizer, and an antidepressant) to the subjects.

In the present study, Hall's (1967) criteria for scoring dreams with experimental situation content were used, with categories of Dominant, Partial, and Fragmentary for overt content (following Hall) and the addition of a Symbolic category for transformed content. It was felt a Symbolic category was valid, considering that dreamers in this study had the opportunity to identify their symbolic referents in the associative session. Nevertheless, probably more conservatism was exercised in assigning dreams to this category than by psychiatrists, Whitman, Pierce, and Maas (1962) to their Disguised category.

There were 34 dreams out of 208 with overt references to the experimental situation (16 Dominant, 10 Partial, and 8 Fragmentary) and 19 dreams with Symbolic references, for

a total of 25%. When rigorous culling out of data was conducted according to Hall (i. e., removal of all Symbolic and Fragmentary references, plus 5 innocuous Dominant and 1 innocuous Partial references; there were no "highly involved" subjects) there were still 10% of the dreams which contained anxiety-laden content overtly related to the experimental situation, as compared with Hall's 6.2%. This difference was very possibly due to interaction of general anxiety about the experimental situation with anxiety about the introduction of new procedures and presleep stimuli content on Night 3, since there was an increase of from almost double to six times the amount of experimental situation dreams for the three groups of subjects on that night. Percentages are also confounded for comparison purposes by inclusion of dreams from Night 1, two of which contained experimental situation references. Individuals ranged from zero to 50% of their dreams containing overt references to laboratory conditions, which closely matches the range of zero to 44.5% found in Dement et al.'s (1965) study and that of 2.5% to 41.0% in Hall's (1967) study.

There were interesting differences between Recallers and Nonrecallers in the amount of influence exerted by the experimental situation on their dreams. Witkin (1969) on the basis of his findings that Recallers have more differentiated perception (field independence) than Nonrecallers (field dependence), predicted that Nonrecallers would be

more directly affected by the laboratory situation and the experimenter and that their dreams would reflect this influence more openly than the dreams of Recallers. This prediction was tentatively supported by the present study in which 21% of Nonrecallers' dreams contained overt experimental situation elements to 17% of Recallers' dreams over three nights. Conversely, Recallers consistently dreamed more in symbolic form about the experimental situation than Nonrecallers on the average, 16% to 5%, respectively. Although Nonrecallers dreamed more overtly about the experimental situation on the average than Recallers, they had a lower percentage of such content than Recallers on Night 3. This may represent basically different ways of dealing with the stress introduced that night by the presleep stimulus, i. e., manifest anxiety by Recallers as opposed to avoidance and denial by Nonrecallers (Tart, 1962).

Dreams with experimental references in this study mainly were directed toward: (a) the experimenter, indicating annoyance, criticism, competition, fears about how the dreams would be used, and some transference attitudes; (b) the experiment and equipment, mainly the electrodes, physiograph, intercom system, films, and the MACL; and/or (c) the performance of the dreamer in the study, including anxieties about enuresis, sexual dreams, and the physical stress imposed by the sleeping conditions.

Anxieties about the experimenter. Dreamer 1, a doc-

toral candidate in psychology, had three dreams about the experimental situation, all directed toward the experimenter:

Night 3, REMP 3

I was dreaming something about...someone who... wanted me to listen to...some special kind of tape, a recording that they'd made...it was your tape that you wanted me to listen to...but I didn't listen to it so I don't know what it was about...there must have been someone else because...I said to myself and to this other person, "she has \$1.98 tapes".....

Associations 10 days later.

I was getting tired of your tapeing my dreams... I tried all different strategies so that you wouldn't wake me up, so I wouldn't have to tell you about my dreams and every once in a while I would wake up during the night and think, "Oh, she's going to ask me...maybe if I stay real still she won't notice that I'm awake and I won't have to describe the whole thing"....other times I would wake up and I would try to remember before you would ask, so that I'd have it all organized....

Night 4, REMP 1

(Excerpt) There were paintings...done by a person in my dream and for part of the dream I was just walking around admiring the paintings ...I think also that I may have told someone that I was spending time doing that and that...maybe I should be spending my time other ways.....you're somehow involved in that and.....I'm not sure whether..you..were..the one who painted them..or ..uh..an art critic or something....

Night 4, REMP 5

(Excerpt) There was another little section of the dream that happened around my old high school ...that I went to back in Maryland...I was running around outside the building and you were there, too, and you were running and telling everyone what a great track star you were..and I was feeling kind of bad cause I couldn't run as fast as you were running...finally we went back to the doors and we were standing around waiting for them to open up the building so that we could find out...

what the opening date was and where our rooms would be and things like that...I was going to be a phys. ed. instructor...I'm not sure what your job was, I don't think you said.....

Associations:

Waiting for the doors to be opened so we could get information sort of reminds me of waiting around for the experiment and waiting to start it...and then waiting around in the morning after I've had my dreams recorded, waiting for a ride...and then waiting to get results about what my dreams were like or what interpretations you had.....Competing with you..doesn't have so much to do with being a track star...as it does with being a competent person and competing with you as a psychologist...you're doing a very involved experiment, one that I've sort of given up on..I'm going to do something simple, that I'll be able to control very well.....(E. What's interesting is that in the dream I was competing with you in an athletic endeavor and that's where you excel.) Yeah, there I was on my own territory..the thing I feel most confident about is my physical ability..that's unshakeable..... I guess I excel equally in both areas, but I'm never as confident about my intellectual ability ...it's not as concrete.

Dreamer 1 seems to have defended herself against anxieties concerning her performance in the dream study and prior anxieties about not starting her dissertation research, with critical and competitive attitudes toward the experimenter.

Dreamer 2, who was badly mistreated in childhood by her mother and stepmother, seemed to form intensely dependent relationships with older women in her current life. In her associations to the following dream she both reveals and denies her transference attitudes toward the experimenter:

Night 2, REMP 4

(After several minutes trying to arouse the dreamer)...seemed like I was doing what you were doing right now.....(Yes?)...and I said, "Be sure and let me know what you're doing"....and..uh..that was right before you woke me up.....
 (E. When you said you were doing what I'm doing now, what did you mean?).....writing people up.....(E. Tell me more about that.) That's what you were doing, that's what I was doing...I was gonna write them up after I got done with them on the machine, just like you're doing.....(E. Tell me more.) Getting the..uh...getting the...what do you call those things...electrodes attached to that person...(E. What person?) The person that was lying on the table...and I just attached them and I said, "Now don't move".....

Associations 10 days later:

If I was having a dream and said I was doing the same thing you were doing...I can see that as like...well, watching children who have watched adults do something and they model us, they watch a model and then they go and do something very much like it, they may leave out some of the details but they do it.....and the thing that surprises me is that maybe that was the child in me coming out...because when you woke me up for these dreams, I think at that stage, you know, when I was not really in my role as an adult, I think it was very possible that I was coming across like a child.....and maybe that's what all adults do when they're sleeping and when they're awakened...(E. Did you feel like a child at any time during the experiment, when I was getting you ready for bed and all that?) Well, yeah! I felt like..well, man...I had to ask you if I could go to the bathroom and ask you how much time I had left to sleep and did I have to get up now and.....(E. Did you feel that I was being a mother?) No, but I felt like it was kind of warm, coming in and plugging me all in and putting those cold electrodes on my warm tummy!

Dreamer 2 was atypically difficult to arouse, sometimes requiring five minutes of urging by the experimenter before she was able to answer coherently. She asked for drinks of water several times during the night and had to go to the

bathroom once during Night 2 and twice during Night 4.

Dreamer 5 became increasingly annoyed with the experimenter's control over her, revealing in the association session that by the fourth night she wanted to go back and sleep in her own bed and that she particularly disliked being told when to get up. She was especially bothered on Night 3 by having to watch the slide show and being "purposefully and unnecessarily frightened." She worried all the next day that she would have to watch something else that night. On Night 3 (REMP 5) she dreamed that the experimenter was teaching a class on dreams and giving a second term final a few days before Christmas. The desks were crammed into a room off the main part of a department store and the dreamer had to sit cramped sideways at her desk. She was both a dream subject and a student in the dream. She reported,

I could remember what you had talked about the day before and I had dreamed it, but hadn't studied it. I wanted credit for dreaming it, because I knew the questions were about me and I shouldn't have to take the final.

Fifty percent of Dreamer 3's dreams contained overt references to the experimental situation. Several years before the study she had kept a record of her home dreams, preserving them in a booklet embellished with art work and quotations about dreaming from famous people. She was fascinated with being a subject, saying, "It fulfills a longing to be able to see myself while I'm asleep."

Several of her experimental situation dreams involved intellectual theories about REMs, sleep stages, and experimental manipulation. One very amusing dream, spontaneously reported on Night 3 from non-REM sleep, finds the dreamer seated in a dentist's chair (there was such a chair in the dream lab) with a rubber sheet around her neck, isolating her head from the rest of her body. She is a subject in an experiment designed to study rapid mouth movements, and she sees,

a pair of choppers...upside down...sort of like the Cheshire Cat..floating out in space there... on a black background....these teeth and gums... sort of jawing away.

Two of her dreams implied that her major experimental anxiety was that the experimenter might arbitrarily interpret the meaning of her dreams:

Night 2, REMP 3

(Excerpt) I was dreaming...about a degree.. called a Masters of..Art and..Awareness.....I do believe that I dreamt I was hooked up to the machine and part of the dream study....it was some kind of therapy...I can hear voices in the room and I come around the corner and there is this Chinese guy there...he's the Tai Chi instructor...he recommends highly that I go in for ...one more session..he'll show a different form ...but this somehow has to do with being monitored...he was being very persuasive..."You'll like it...it'll be good for you".....and at some point earlier (she was thinking about) if you're hooked up and you write different words, you can get different patterns off the machine...presumably as if..you..had different dreams..you might get different patterns..and that's a lot of hooey, but that's the way it was in the dream...this is supposed to relate to a real live literary theory.....at this point in the dream I guess

I'm looking at it in a book..and it says it's... obarisation...is the name of this thing..and I guess what it really is, is some dream version of Eliot's Objective Correlative.....and there was a narrator...talking about it and it was one of these hearty announcer male voices...the last image is book covers...have to do with this literary theory...and that some group really believes in this theory...and this book is kind of a dictionary of...ombarimsdation, or whatever it is... in that words are given with....uh...with reactions to them..it's like everybody is gonna..... give words the same connotative meaning...and at that point the voice was talking about degrees in M.A.A....

Associations eight days later:

(E. Associate to the dream study and a Masters of Art and Awareness.) Well, clearly the dream study heightens awareness of the dream....(E. What about therapy?) Well...in a way, an unavoidable sort of association..cause, I mean, there's always the stereotype of the Viennese psychoanalyst asking, "Have you any dreams for me today?"...(E. What about the dream theory?) When you read it back to me it sounded like gobblegoodygook...but at the time it made some amount of sense...I remember being very interested by that thing, I guess it's Through the Looking Glass, where Alice is told not to wake up the White Knight, cause if she does, there she goes ...and as a kid I used to wonder, well, suppose what we call waking life is a dream.....the Objective Correlative thing is kind of interesting ...now I know I read the article where T. S. Eliot expounds the notion...he felt that for every emotion on stage...I think he wrote it initially about Hamlet...that for every emotion on stage and every turn of phrase there was an objective counterpart in real life...and that drama heightens what was objectively going on and kind of puts a twist on it...and in my mind it sort of confuses itself with how a metaphor works...on the one hand you have a metaphor which refers to a concept..or an actual process or even a thing...and in a way what we're doing now sort of illustrates that, trying to tie what happens in the dream with what happens in real life, whether it's processes or thoughts or memories.....I would say that the dream was the drama, that real life forms the set of objects from which

dreams draw.....so in a sense I guess that theory isn't gobbledygook at all.....oh, here's where the gobbledygook comes in...that there's a uniform set...it's like a mathematical function, that for every dream element there's one and only one thing out in the real world that it corresponds to...I never read any Freud and I just read a little bit of Jung...but it seemed to me that he (Freud) was awfully dogmatic about what symbolism means in dreams, like round objects are female things and long ones are male things and going underground is rebirth...actually I don't find that much difference between Freud and Jung and it seems that Jung is saying that the human race as a whole has these symbols and basically they were for the same things, like being born or dying or being reborn or whatever....and I'm not so sure that one can do that, although it seems to me.. I think somebody told me this, that if you go to a Freudian analyst your dreams will start getting very Freudian, but if you go to a Jungian analyst, you'll have all these wonderful, archetypal sorts of dreams...

Night 4, REMP 6

(Excerpt) I dreamed that I was by an academic fellow and..he looks like Professor von Frisch, who just won part of the Nobel prize....but he sounds like my father..his voice does...there's a lot going on, but I'm not sure what it all is ...this fellow that looks like von Frisch..he's a psychologist..he's looking over his account of something that's happened to me...which is probably going on fairly much as he recounts it... even though it's all written..it's even printed.. and..I sort of disagree with his interpretation of what's happened...because, of course, he wasn't there...really..even though he's there now.....

In the association session, Dreamer 3 realized it wasn't von Frisch in the dream, but Conrad Lorenz; however, both men study animal behavior and the dreamer's father "clearly observes my behavior and makes judgments about it." She did not elaborate on these rather minor associations. Nevertheless, it seems fairly obvious that being observed by a

psychologist is analogous to the dream study and relates to her distaste in the previous dream for dogmatic interpretations.

Anxieties about equipment. Many dreams contained episodes of speaking on the telephone, into microphones, and over intercoms, sometimes involving frustrating situations. Dreamers 3, 5, and 6 dreamed of having electrodes attached to them. Dreamer 4 dreamed of a shortwave radio receiver attached to his chest and when he dialed it with his finger he got the experimenter's voice waking him up. Dreamer 2 attached electrodes to someone else and Dreamer 12 plugged some equipment into the wall for a friend lying in a hospital bed. Since puns are often encountered in dreams, it is interesting to note that along with dreams of being connected to or connecting someone else to equipment, Dreamers 9 and 12 both had dreams in which someone was bragging about having "connections," for getting people jobs, and for controlling a large staff of workers in a kitchen-bakery. Dreamer 12 had an interesting dream which appeared so real to him that he thought it had actually happened when he was making the dream report. He saw a postman delivering a package tied with string, bearing the label "Please Rush," to the building in which the dream study took place. He felt later that the package was himself in the study, being taped, typed out, and packaged.

The Mood Adjective Check List which was filled out twice on Night 3 by each dreamer affected three dreams: Dreamer 6 on Night 3 (REMP 5) dreamed of looking through binoculars at directions which had a mileage table and some written instructions. At first he thought they were from some source other than himself, but later had to admit that the handwriting was his own; Dreamer 7 on Night 3 (REMP 5) dreamed he was filling out the MACL, but there was nothing written on the pages and then had to write something about the slides he saw; and Dreamer 12, who was extremely comfortable and secure sleeping in the lab and wanted to volunteer for future studies, felt somewhat betrayed by the "neutral" film showing on Night 3, saying "What trickery is this?" and "Why did you show me that film?" His third dream on Night 3 ended with the following scene:

Night 3, REM 3

You were telling me about a white...it looked like a poker chip...but it was a little white card.. and you didn't quite finish saying all of it, but you thought there was an extra card in the deck by accident, because I got two of them...we were in here.....and I didn't understand...there shouldn't have been an extra one...it had something to do with my filling it out or something..but you said that you thought there was an extra one and you were starting to write something with your pen and explain it to me and then you woke me up...

Associations seven days later:

Did you show me the movie this night?...Yeah, because I had to fill that thing out after the movie, didn't I?.....I do remember playing cards when I was much younger with a friend that was continually cheating and deceptive and it could have been that when you showed me the movie, I was really

wondering what was going on...yeah..."what's she got up her sleeve?"...and you wouldn't tell me anything, yeah...

Dreamer 10 dreamed that the physiograph recordings were thrown off by an earthquake and Dreamer 3 dreamed of not being able to sleep, so she sat up in bed writing the same word over and over, causing the physiograph to "go bananas." Such dreams seem to indicate an unconscious wish to sabotage the experiment.

Task-oriented dreams. The experience of being awakened and reporting a dream becomes itself a day residue which may influence subsequent dreams (Dement & Wolpert, 1958). Dreamers often dreamed they were telling the experimenter a dream or that the experimenter was going to waken them just before it actually happened and one dreamer told another person in a dream about a dream she had in the just previous REM. They dreamed of telling people about the dream study, of explaining their motives for being in the study, and of other people wanting to be in the study. Dreamer 11 dreamed the experimenter was out of the room when she was dreaming, "that was your hard luck that you were missing out on some dreams...and I was relieved that you weren't there, so I didn't have to talk about it." Dreamer 1 stepped down onto a dock in a dream and thought, "Well, this is just a dream and I'm aware that it's a dream and I wonder if it'll count ...probably won't count cause I know that I'm just dreaming."

Anxieties about sexual dreams. Dreamer 7 dreamed on

Night 3 (REMP 4) that he was sitting on a couch in a library with three women. Two male friends were playing the piano and a bass. The dreamer began kissing one of the women who was nude, feeling warm and passionate. The scene shifted abruptly at this point to a hallway-restaurant where the dreamer and the three women were eating sandwiches. Associating later to this dream, Dreamer 7 said, "I was afraid this was going to be my one wet dream...I kept on wondering if I was going to have one of those kind of dreams."

Dreamer 4 on Night 2 (REMP 5) dreamed of being in an old museum/house looking at and discussing books that were on a restricted list for readers over 21, with several men. One book was entitled, Looking or Walking Into Dreams. At one point during the discussion there was casual wrestling between the dreamer and another character whose preadolescent genitals developed into adult genitals after kissing and hugging commenced. Dreamer 4 only remembers three or four home dreams a year, "usually only wet dreams." In talking about the dream book during the associative session, he said:

It was a little risqué, but you couldn't see why it would be harmful...I guess it did have some sexual dreams in it, but that wasn't the whole book...it was more or less a complete study of dreams... (E. Were you concerned you might have a sexual dream here?) Yeah...I sort of expected it...yeah, I was sort of concerned about that...(E. And whether you'd feel like telling me?) Yeah, I was...I talked with my

dad about it and he said, "Well did you have any sexual dreams? Boy, I'd be embarrassed to tell about that" and I said, "Well, it was funny, I wasn't very embarrassed."

The only obvious censorship of a dream occurred when Dreamer 12 laughed in a dream on Night 4 (REMP 4) just before being awakened and then had the following exchange with the experimenter:

(E. Were you laughing?).....Oh, yes!.....
(E. What were you dreaming about?) I can't
 tell you...(laughs).....Oh, I suppose I could but
 I'd rather not...(E. O.K.)

The dreamer later revealed the dream was sexual. He expressed some regret that he hadn't reported it because he couldn't remember the details of the dream in the morning.

On Night 4 (REMP 2) Dreamer 6 dreamed he was in bed with two women, being sexually stimulated by various means. Later in the same dream report he amended this to:

I can't remember it as being actually stimulated and actually being satisfied...it was kind of like ...maybe it even took on...because I can remember myself being kind of separated from it...maybe it even took on something like a slide show or being shown a film...like "would you want to be stimulated in that way" kind of thing.

Interestingly, two other scenes in this same dream had settings from the dreamer's past life in which he was sexually embarrassed because of lack of privacy; his parents' room in which he was discovered by his mother in bed with a woman friend and a bedroom in which he and his wife had to share their privacy with a friend who slept in the closet.

Two women may have been inhibited by the presence of a male graduate student in the lab on two nights observing the experimental procedure. Dreamer 2 jokingly commented before going to sleep on Night 2 that she would be embarrassed for him to hear if she had any erotic dreams.

Dreamer 9 on Night 4 had just attended the first session of a human sexuality class before coming to the lab, where that night the male student observed the experimenter attaching the electrodes and applied two himself. Actually the male student left the lab before this dreamer's first awakening, but unfortunately the experimenter did not inform her of this. Dreamer 9 had speculated she would surely have sexual dreams after attending the class; however, in general, her dreams were more fragmentary and difficult to recall that night than any other. The only sexual content occurred in REMP 4 when she dreamed she was crossing a freeway bridge and talked to a man about "what bridges...something about the sex gap with the air bone gap...or something."

In a study by Domhoff and Kamiya (1964a) of differences between home and laboratory dreams, they found in 120 dreams of 12 men that 2% of the laboratory dreams and 9% of the home dreams ($p < .05$) contained Sexual Acts, defined as "holding hands," "kissing-hugging," "petting-necking," "masturbation," "in bed with," and "sexual intercourse." The difference was speculated as due to both the inhibitory effect of the experimental situation and the recall of home

dreams more likely to awaken the dreamer because of unusual content, "(the ultimates of which are the nightmare and the wet dream)" (p. 523).

Of the 208 dreams collected in the present study, 15% contained Sexual Acts as defined by Domhoff and Kamiya, with the addition of "behaving seductively," and "someone undressing or being undressed, other than the dreamer undressing himself or herself." There were no dreams of masturbation. For the six men 50% of their dreams with sexual content involved sexual intercourse, while none of the sexual dreams of the six women involved intercourse and only one dream could be construed as containing behavior leading up to it. None of the sexual dreams of either men or women were overtly directed toward the experimenter. In the Whitman et al. (1962) study most of the overt dreams about the experimental situation (32%) seemed to have sexual content directed toward the two male experimenters, who were seen as seductive by the women dreamers and sadistic by the male dreamers. Whitman et al. generalized that the women in the study,

dreamt most frequently of sexuality, ranging from erotic behavior on the part of the experimenter all the way to rape and prostitution fantasies. Males, on the other hand, dreamt primarily of castration and being cheated financially of their pay for the experiment. (1962, p. 434)

Anxieties about enuresis. The dreamers were semi-prisoners in the sleeping room when attached by wires and cables to a wall and although the door could be opened

easily from the inside, it could be opened only by a key from the outside to protect the dreamer from accidental intrusions. One dreamer compared the experimenter, unlocking the door from the outside, to a jailer. In order to go to the bathroom, dreamers had to inform the experimenter of their need, the physiograph had to be turned off, the experimenter had to enter the sleeping room to detach the electrode leads from the terminal box, then depending upon the necessity for dressing (some dreamers slept nude), they could walk to the next hall to the bathroom, come back and reverse the procedure. Not surprisingly, only one dreamer went to all the trouble (three times).

Several dreamers dreamed of going to the bathroom with the electrodes attached and wires trailing, of flushing toilets, of bathroom settings, or of having just come back from the bathroom. Dreamer 7 reported a dream in which he was sitting on a water bed and spilled a cup of tea.

The experimental situation resurrected strong childhood anxieties about bedwetting for one dreamer. Dreamer 6, a large man over 6 feet tall, felt extremely restricted by the average size bed and the electrodes. Besides, he wrenched his knee turning over in bed on Night 1, bringing back the pain of an old injury. Although a Recaller, he did not recall dreams from the first three REMPs of Nights 2 and 3, reporting only vague thoughts about feeling entangled, hooked up, or feeling that he was going to be awakened

because he was dreaming. On Night 2 (REMP 5) he dreamed of watching a play rehearsal with two actors wearing costumes consisting of sheets twisted about their waists and shoulders, "they were standing in a position, in a dance, and maybe this wrap or sheet was in some way restraining them or holding them or turning them or controlling them..." A later episode in the same dream follows:

Night 2, REMP 5

(Excerpt) At first it was a one-story building that I kind of walked into...with all these wires attached to me..and..I had to go to the bathroom ...which I do right now...it was kind of like a restaurant and there was a men's john on one side and a ladies' john on the other side...and I went right into the john and sat down and went to the bathroom and I think when I was in there someone was in communication with me, like this microphone bit..speaker..you know, what we're talking over right now...and Joanne was talking to me... and asking how things were going and I didn't know whether she knew that I was...uh..hooked up with all these wires..

Associations 20 days later:

You can't just get up out of bed and go to the bathroom...or get a drink of water...because you're in a certain behavioral and physical situation.. you're behaving in a certain way by being still.. and physically because you're connected to something...and maybe that whole thing without any clothes on and with the wires was a way of just showing myself, "O.K., it's all right, you can go, but Libby's (experimenter) still connected to you in some way".....being incapacitated..I really felt very restricted with those wires even though I tried to relax...(E. Did you feel vulnerable in the experiment?) I don't think so...I felt like I was in a comfortable situation, that I didn't have to...I didn't ever feel that I had to be guarded from talking to you.....maybe I was really uncomfortable in the experiment and then I rationalized, "Well, why should I be uncomfortable...I know Libby and these wires aren't going to electrocute me or anything".....(The dreamer

related more of the dream during the association session: While he was going to the bathroom he looked down through the floor boards and saw a river below, luminescent and moving, and he thought he had either created the river or polluted an already existing one.)

Another dream from this same protocol continued the theme of excessive amounts of water and bathrooms:

Night 4, REMP 5

(Excerpt) I was trying to catch one of several dogs that were barking.....there was an area that all of us were talking about at the time..it was a place that was being flooded...seemed like there was a helicopter that I took out to this area because I couldn't get out there any other way and at that point I was worried because I left the helicopter out there...I thought, "Oh, gosh, the helicopter's got flooded...or got washed away"...it seemed like it was an area that people walked to as an exercise because this lady....was saying, "Well, this area that I usually walk to is not accessible to me and..so I can't get my exercise".....I remember that the two dogs were barking and I went after them....and I found one in this bathroom and so I just told her to shut up.....

Associations:

(E. What are your associations to floods?) Well, the first thing that pops in my mind is constantly thinking when I was in that bed, "Well, o.k., you gotta make sure that you go to the bathroom before you get in the bed"....I can associate that with my early childhood and wetting the bed and constantly having that fear... (E. What about the helicopter?) A helicopter is a kind of flying contraption that does wondrous things..it doesn't need a long takeoff, you can just pop right up, and it's kind of like if something happened all of a sudden, a helicopter would be very handy, like if a flood happened, you could just lift right off from it....(E. Or you could have got out of that bed if you'd had a helicopter.) Right...I could have just taken off and taken that machine with me.....it's really strange, like I thought I was never going to stop, you know, wetting the bed when I was younger and then just all of a sudden, I just had no trouble at all....well,

it's been ever since I've been 17 or so that I've had no trouble holding.....the accumulated water until morning...(E. I think a lot of kids just have trouble waking up at night.) Yeah....or fear of waking up...I can remember being somewhat fearful of the night...I mean, of getting up and going to the bathroom...

Anxieties about exposure. Dreamer 10 on Night 2

(REMP 2) dreamed he was getting into a bed that was on display in a department store window; Dreamer 11 on Night 4

(REMP 3) dreamed of being in a hospital room and a man "who was in charge of everything, something to do with rackets.. criminal minds..wanted to know every dream about everyone to use it against them;" Dreamer 6 on Night 4 (REMP 5)

dreamed of being nude with electrodes attached to him and a woman walked into a room where he was sleeping, hugged him warmly and urged him to come outside with her where the sun was shining brightly on a busy street and the dreamer resisted, thinking, "Now wait...it doesn't make any difference to me, but I don't want to be picked up parading around in my birthday suit...I definitely didn't want to go through that door;" and Dreamer 5, who works as a telephone operator, dreamed on Night 1 (REMP 1) of using her phone at work to call a friend and then was afraid her supervisor was watching and she followed the phone lines down, trying to find their source.

The preceding represents a wealth of unambiguous evidence of experimental situation incorporation in dreams, in comparison with the more rare and subtle references to the film and slides experience. This could be due to the larger amount of waking time spent in the experimental situation, more ego attachment to it, and the "real life" aspects of it, as opposed to the viewing of a 15-minute film. The novelty and stress of the experimental situation is perhaps more analagous than the stressful film experience to the Breger et al. (1971) study of the "natural" stress situation of people either awaiting major surgery or being the focus of a psychotherapeutic group. The use of stress films for studying transfer to dreams should not be discarded, however, until research is conducted using full length films, at least two hours long, such as the surrealistic Satyricon by Fellini, El Topo by Jodorowsky, or his latest, The Holy Mountain. These films perhaps would generate feeling more like that of waking life stress situations, because of their length, power, color, and shock. Such films, going beyond the abstract genre of Meshes, would elicit even more idiosyncratic responses from dreamers. Like a projective test, they could be used to explore personal symbols in dreams. This would entail overcoming the methodological problems discussed earlier.

To trace waking experience in ~~dreams~~ using the methods employed in this study, a more mundane film even than Erosion

might be chosen. Such a concrete film, representing a more consensual reality, would be expected to provoke a less idiosyncratic response from the dreamer than an abstract or surrealistic film.

Some Thoughts About Dream Recall

This experimenter would like to add a factor to the long and sometimes contradictory list of possible contributors to nonrecall of home dreams; bizarreness of dreams. Domhoff and Kamiya (1964a) found that laboratory dreams contained significantly more bizarre elements (i. e., metamorphoses, unusual acts, and magical occurrences) than home dreams for the same persons. The presence of bizarre elements in more than 50% of the laboratory dreams collected in this study leads this experimenter to suggest it is not that dreamers dream more bizarrely in the laboratory, but that these dreams are not as readily recalled at home, particularly when the bizarre element is not easily translated from the intrapsychic language of the dream to the usual language of waking reality. Often only half-awake when reporting dreams in the laboratory, the dreamer is not in a state of mind to judge the bizarreness of the dream and reports content which later does not make "sense" to him. A not unusual comment when dreams were read to the dreamer during the association session in this study was, "I can't remember that at all...are you sure I said that!" It is a common

experience to speak to someone while falling asleep and subsequently to define it as "gibberish." Similarly, in the half-arousal state following a dream, the dream events and thoughts may seem rational, but upon awakening fully the meaning becomes elusive and sometimes at this point large portions of the dream fade away. It is proposed that the memory of dreams is a state specific one and therefore, the transfer of the surrealistic contents from one state of mind to another is a precarious task. The transitory state between dreaming and waking seems crucial. Strong emotion in the dream state, such as the fear engendered by nightmares, facilitates the memory transfer. Future phenomenological research by experimenter-dreamers will perhaps give us more techniques for remembering our benign surrealistic dreams.

Bobbing on the surface
when I awake
Beguiling, floating brightly
just without my reach
Cautious I come near,
introspectfully.

Scrimmed with mist, swollen,
splendored from the night
You dance into the sky
through my fingers
Out of sight and sound and memory
unknown ethers
lifting you beyond me.

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APPENDIX A

SENTENCE COMPLETION FORM: PROTOCOL OF DREAMER 11

Complete these sentences to express your real feelings.

Try to do every one. Be sure to make a complete sentence.

1. To me the future looks uncertain.
2. I feel that a real friend is accepting and non-judgmental.
3. I believe that I have the ability to develop my career.
4. My mother was very strong.
5. I always wanted to be famous and sought after.
6. I know it is silly, but I am afraid of water and driving across bridges.
7. My private life is inadequate.
8. I need to love and be loved.
9. When I'm anxious I overreact.
10. I like to enjoy myself with people.
11. The happiest time is when I'm sharing anything with the man of my dreams.
12. I wish I took things more in stride.
13. When I was a child I was lonely.
14. What annoys me is to be misunderstood and put down.
15. Other people seldom know where I'm at.
16. I am best when I am being productive and accepted.

17. I hate feeling alienated.
 18. I look forward to not much these days.
 19. I don't like people who use me.
 20. If I were very young again I'd structure my educational goals differently.
 21. I believe most women feel frustrated in a man's world.
 22. I wish my father had been warm and understanding and tall.
 23. My greatest mistake was allowing myself to be put down.
 24. Married life has been hell.
 25. My secret ambition in life is to be famous and sought after.
 26. My mother and I never got along.
 27. My dreams are provocative.
 28. My earliest childhood memory was being angry all the time.
 29. My sex life is nil.
 30. I am sensitive about my height.
 31. Back home we were very poor.
 32. At night is about the only time I can relax.
 33. I regret not having more education.
 34. When I am older I don't know how things will be.
 35. In giving orders to others I am sometimes abrasive.
 36. Men either see me as a friend or reject me.
 37. When I think about dying I am unemotional (objective).
 38. Mentally disturbed people live in a living hell.
 39. My mind is often disorganized.
-

40. I fantasize about being liked, admired and loved.
41. I am very alone.
42. My greatest worry is that I won't make it professionally and will end up doing something I detest.
43. I secretly want to find an ideal mate.
44. My nerves are on edge.
45. Fighting sometimes stimulates me--sometimes upsets me.
46. When I was younger, I felt guilty about being bad, being molested, causing bad things to happen.
47. I want to know as much as there is to know about things that interest me.
48. I feel that my father was brilliant and cruel.
49. People whom I consider my superiors are people I can learn from.
50. I volunteered for this dream study because I am interested in discovering more about myself.

APPENDIX B

CRITERIA FOR DREAMERS' RATINGS OF THEIR OWN DREAMS

Involvement

1. None
You did not participate in the dream and experienced no feelings about it, also other characters experienced no emotion and were only minimally involved.
2. Some
You were not very active in the dream and experienced no particular feelings about it, although the other characters may have experienced emotion and been actively involved.
3. Moderate
You were an active participant, having several interpersonal interactions and experienced some emotional involvement; other characters may be very actively involved emotionally and behaviorally.
4. Strong
You clearly experienced feelings as an active participant in the dream and were behaviorally active, with several emotionally involved interactions with other characters; other characters may be very emotionally and behaviorally involved.
5. Intense
You experienced strong emotion, were very active throughout the dream and had many emotionally charged interactions with other characters; other characters may also be very involved emotionally.

Vividness

1. Not Vivid	No visual experience in the dream.
2. Somewhat Vivid	Vague, dim, or incomplete fragments of visual perceptions.
3. Moderately Vivid	Visual experience, but with certain parts missing; hard to see everything in the scene.
4. Strongly Vivid	Very clear but not quite as vivid as a real life experience would be.
5. Intensely Vivid	As clear and vivid and complete as waking experience.

Implausibility

1. Quite Plausible	Something that could well happen to you.
2. Plausible	Something that conceivably could occur in your life or in the future.
3. Somewhat Plausible	Something that is possible but not very likely to occur to you in real life or in the future.
4. Implausible	Something most unlikely ever to occur in real life to anyone.
5. Bizarre	Something so extremely unreal or fantastic that it is unusual even in a dream.

Pleasant-Unpleasant

1. Quite Pleasant	All self-explanatory
2. Somewhat Pleasant	
3. Neutral	
4. Somewhat Unpleasant	
5. Quite Unpleasant	

APPENDIX C

PREPARATION OF A SLIDE SEQUENCE AND SYNCHRONIZATION WITH A FILM SOUNDTRACK

Film Analysis: Selection of Frames

A time and content analysis of the film, Meshes of the Afternoon, was made using a 16mm viewer-editor and a frame counter. The film contained 171 cuts (sections between splices) and 18,988 frames. Each cut was analyzed and 255 frames from 165 of the cuts were chosen as essential for representing the action and symbolic elements of the film. A frame count was made for each cut and for each action or visual element represented by the chosen frame and converted to seconds at 24 frames per second. This provided the allotted projection time for each slide to be made from the individual frames and a cumulative time index for the proposed slide sequence. Theoretical length of the film according to 24 frames per second was 13 minutes, 11.17 seconds.

Slide Sequence

Two hundred and fifty-five 35mm slides were printed on Ektachrome-type color stock using a magenta filter to correct for green and blue tints and to match as closely

as possible the black-and-white tone of the film image. Black-and-white stock was not used because of its high contrast duplication characteristics, which lose the subtleties of shadows and light areas. The slides, in paper mounts, were loaded in two Carousel magazines, 134 in the first and 121 in the second. (It takes about five seconds to change magazines on the slide projector).

Synchronization

Problem: To synchronize 255 slides to be shown on a Carousel slide projector with the film sound track, prerecorded on the left track of a stereo magnetic recording tape (1.5 mil).

Solution: Place variably timed, short duration electrical signals on the right track of the stereo tape, which when fed through a sound synchronizer (Kodak Carousel-Model 2) during playback would automatically trigger slide changes on the projector. Due to the mechanical limitations of the slide changing, there is a minimum time of 1 second $\pm$.1 second from the projection of one slide to the next, .6 seconds of this time being black screen.

An audio-oscillator was used to generate a pulse frequency of 600 cps. A telegraph transmitter (Western Union paper tape reader), fed by a previously punched paper tape, was used to place signals on the magnetic tape at variable times ranging from 10.92 seconds to .93 seconds. A perfora-

ator (Western Union-Model 5724-A) was used to punch holes on the paper tape.

Physical and Electrical Setup

1. For placing signals on the tape:

2. For playback:

Transmitter

This device is one which sequentially reads a punched paper tape, 1/2 inches wide and of indeterminate length. Across the paper tape (at right angles to its length) from one to six holes may be punched at fixed intervals along the

length of the tape. One hole is a sprocket hole, the rest are signal holes. Any one or any combination (including none) of the signal holes may be punched. The paper tape is read by electrical switches in the transmitter, one switch for each signal hole, i.e., five switches. The transmitter reads the paper tape by examining the first set of holes on the tape, causing each of the five switches to be off if there is no hole for that switch and on if there is a hole corresponding to the place of the switch. Then the paper tape is advanced and the next set of five holes examined in the same way. This is done at the rate of 6.5 sets of holes a second.

The electrical setup is fairly straightforward. The oscillator is connected to the input of the tape recorder through the one switch of the five which is chosen. Then when a hole on the punched tape is encountered at a place corresponding to the switch, the switch is turned on for the duration of the time that the set of holes is read (about .14 seconds) and a signal of that length is placed on the recording tape. The switch acts as a simple on-off device. A 500 ohm resistor, reducing the normally high impedance of the tape recorder input to that of the low impedance of the oscillator output, acts to prevent a signal being sent to the tape recorder when the switch is not yet closed.

Timing Calculations

The data converted were the starting times of each slide. Since the transmitter reads 6.5 sets of holes per second to a first approximation, starting time $\times 6.5$ should give the number of the hole to be punched. The actual projection time of the film (12 minutes, 42.5 seconds) was not equal to the theoretical time for the film (13 minutes, 11.17 seconds) due to the projector not running at exactly 24 frames per second. Therefore, a correction factor (measured time/theoretical time) of $.9637 \times 6.5 = 6.264$ was necessary.

APPENDIX D

EXAMPLE OF SCORE AND TALLY SHEET USED BY
JUDGES FOR DREAM CONTENT ANALYSIS:
PROTOCOL OF DREAM 169

OBJECTS	SETTING	CHARACTERS	ACTIVITIES	EMOTIONS
TAV BH BE CM HH (tail) CL HH BE CM BH CM AD CM BH MS BE BAR AD HH BH HH BH AD NA BE BT BE BH BE	IU IU OU	1 MSA 1 FSA 1 ANI 1 ANI	M, 1MSA + D S, 1MSA + D D + 1MSA V, 1 FSA A M, 1ANI 1MSA + 1 FSA V = D M M* (flew) P L SM	AP AP (strange) AP (queasy)

1. KEY _____	20. SURF-BEACH _____
2. FLOWER _____	21. BLACKROBED PERSON _____
3. KNIFE _____	22. MULTIPLE SELVES _____
4. TELEPHONE _____	23. DEATH _____ ✓
5. PHONOGRAPH _____	24. INJURY _____
6. BREAD _____	25. INSANITY _____
7. MIRROR _____	26. FALLING _____ ✓
8. GLASS _____ ✓ ✓	27. CLIMBING _____
9. STAIRS _____ ✓ ✓	28. CUTTING _____
10. SHADOWS _____	29. CHASING _____ ✓
11. WINDOW _____	30. CHOOSING LOTS _____
12. DOOR _____ ✓	31. REPETITION _____
13. OVERSTUFFED
CHAIR _____	32. MAN-WOMAN ENCOUNTER _____ ✓
14. LOCK _____	33. MUSIC _____
15. HAND _____ ✓ ✓ ✓	34. MOVIES, PLAYS, TV,
SLIDES, PHOTOS _____
16. EYE _____ ✓	
17. LIPS-MOUTH _____ ✓	
18. THROAT _____	
19. SUNGLASSES-
GOGGLES _____	

INCORPORATION OF EXPERIMENTAL
FILM OR SLIDES

YES NO MAYBE

X		
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APPENDIX E

GENERAL INSTRUCTIONS TO JUDGES, SPECIFIC INSTRUCTIONS FOR SCORING ACTIVITIES, AND SUMMARY OF SCORING SYMBOLS

1. Read the entire dream first. This gives you a general idea of number of settings, amount of repetition, and any contradictions. It is also helpful in sorting out the sequence of events, since the dreamer may start with the last part of the dream and go backwards or skip back and forth.

2. During the first reading, it will be helpful to underline all characters, objects, and activity verbs which are to be scored. In the margin you might note by number each change of setting. Also in the margin you might want to make a different mark for any adjective describing an emotional state. With these guides, the actual scoring during subsequent readings should be much easier.

3. The dreams in your report notebook have been randomized differently than those in the other judge's notebook in order to control for order effects. Therefore, it is important that you score the dreams in the order in which they appear in the notebook. In order to maintain the least bias possible toward each dream, you might attempt to approach each dream report as if it were the first one you

were reading.

4. It is common for judges to drift apart from each other in interrater reliability as they get further along in a task such as this. Any eccentricities in scoring tend to get larger and more divergent. To reduce this as much as possible, it is suggested that you review the scoring instructions from time to time, perhaps after each batch of 25 dream reports. If you are tired or bored, it is best to postpone the work until you are fresh and interested again.

5. Read those parts of dream reports bracketed in red, but do not score or tally, as this is associative material the dreamer gave during the dream report and not part of the dream.

6. Use red ink to score dream content which you believe to be a direct transfer from the Mesher film or slides.

7. To maintain confidentiality and your own objectivity, do not talk to anyone about the dream reports, scoring problems, etc.

8. Treat each dream report as one dream unless it is marked at the top as containing two or more separate dreams as determined by the dreamer.

9. Be conservative in your scoring, e.g., do not infer emotional content.

10. When scoring objects indicate any metamorphoses by adding a 7 to the score for the original form and an 8 for the changed form.

11. Always score bizarre imagery, even if you have to write it out. Indicate bizarreness with a star beside the score.

SUMMARY OF SCORING SYMBOLS AFTER HALL AND VAN DE CASTLE (1966)

Settings

I	indoor	D	distorted
O	outdoor	F	familiar
A	ambiguous	G	geographical
NS	no setting	U	unfamiliar
		Q	questionable

Activities

P	physical	E	expressive communication
M	movement	S	visual
L	location change	A	auditory
V	verbal	C	thinking

Emotions

AN	anger	CN	concentration
AP	apprehension	EG	egotism
HA	happiness	VG	vigor
SD	sadness	NE	no emotion
CO	confusion	OTHER	
SX	sexual arousal		

Objects

Architecture

AR residential
 AV vocational
 AE entertainment
 AI institutional
 AD details
 AB building materials
 AM miscellaneous

Implements

IT tools
 IW weapons
 IR recreation

Other

HH household
 FO food
 TR travel
 ST street
 RG region

NA nature
 CL clothing
 CM communication
 MO money
 MS miscellaneous

Characters

Number

1 individual
 2 group
 3 individual
 dead
 4 group dead
 5 individual
 imaginary
 6 group
 imaginary
 7 original form
 8 changed form

Sex

M male
 F female
 J joint
 I indefinite

Age

A adult
 T teenager
 C child
 B baby

Identity

F father
 M mother
 X parents
 B brother
 T sister
 H husband
 W wife
 A son
 D daughter
 C child
 I infant
 Y family member
 R relative
 K known
 P prominent
 O occupational
 E ethnic
 S stranger
 U uncertain
 L experimenter
 ANI animal
 CZZ creature

INSTRUCTIONS FOR SCORING ACTIVITIES
(HALL AND VAN DE CASTLE, 1966)

Scoring Criteria

P = Physical. Any voluntary movement of the whole body or of part of the body while the character remains more or less in one place is scored as a Physical activity; in other words, physical activity in a limited spatial area. In order for a physical activity to be scored, the nature of the physical activity should be clearly recognizable from the dream report. Reference to a character shopping, for example, is too vague to be scored because the description is not precise enough. It is possible that it might have referred primarily to Visual activity, as in window shopping; or to Verbal activities, as in telephone shopping or haggling with a clerk; or to Movement activities, as in walking from store to store; as well as to Physical activities, such as handling various objects in a store. Examples of scorable Physical activities are: dressing; combing one's hair; sitting down; getting up; bending; writing; picking up an object; chopping wood; etc.

M = Movement. When a character changes his physical location by self-propelled movements of his body, e. g., walking, running, crawling, sliding, swimming, climbing, etc. Entering or leaving are also scorable if the character is voluntarily carrying out these activities under his own muscular power. Entering a hospital on a stretcher would

not be scorable in this class. Involuntary movements such as falling, slipping, or being thrown through space are not scorable as Movement.

L = Location Change. Whenever a character moves in a spatial dimension and arrives at a different location through any means other than self-propelled muscular activity. The change in location may occur because the character uses some means of transportation such as a car, plane, or boat, or the character may fall through space, be carried or dragged by someone else, etc. Any verbs which suggest a change in location, even though they are somewhat vague as to just how the change was effected, are scorable as Location Change. Examples are: went; came; arrived; departed; journeyed; traveled; etc. In order for Location Change to be scored, there must be an indication that the new surroundings have appeared after some intervening travel by the character, even though the means of travel have not been specified. However, do not give a score for Location Change when a character suddenly finds himself in a new location because there has been an abrupt shift in setting.

V = Verbal. Any type of vocalization, whether it be a breakfast conversational grunt, a thundering speech, a whispered affectionate term, an abusive curse, a recited poem, a dramatic soliloquy, singing a song, etc.

E = Expressive Communication. Non-verbal activities associated with emotional states which are sometimes not

under voluntary control. Laughing and crying are the most common forms, but this class also includes such activities as smiling, scowling, baring one's teeth, drooling, gasping, etc.

S = Visual. All types of seeing activities, e. g., see, notice, read, watch, peek, glance, view, inspect, distinguish, etc., etc., etc.

A = Auditory. Whenever a character is described as being engaged in any type of hearing or listening behavior.

C = Thinking. This class consists of the most covert form of activity--thinking activity. In order to be scored as Thinking activity, the description should indicate that deliberate continued mental effort was involved; sustained ideation with a goal-directed or problem-solving quality. Examples of thinking activity verbs are: concentrate; puzzle over; contemplate; ponder; brood; ruminate; preoccupy; engross; study; weigh; speculate; deliberate; think about; decide; figure out; understand; grasp; plan; etc. Brief, transient mental activities are not scored, such as "I think it was blue," "I remember the room was familiar," "I forgot my coat," and "I couldn't recognize him." Also do not score wishes, feelings, and sensations, such as "I wished I were home," "I felt sorry for him," or "I was thrilled by the view."

Scoring Procedures

1. If the dreamer is the only character involved in an activity, simply score the letter of the activity class.

"I SLICED A PIECE OF BREAD from the loaf on the table."

P

2. If an individual character or group character other than the dreamer is involved in an activity, score the letter of the activity class, followed by a comma, and then the symbol for the individual or group.

"When Roger finally REACHED THE TOP OF THE MOUNTAIN he rested, and then HE PILED A GROUP OF ROCKS on top of each other to make a marker."

M, 1MKA

P, 1MKA

3. If more than one individual or group, or the dreamer and another character or characters are involved in parallel activities, score the letter of the activity class, followed by a comma, and then the scoring symbols for the characters joined by a + sign.

"We LOOKED AT EACH OTHER for awhile and then we both SMILED."

S, D + 1IUA

E, D + 1IUA

"Christine and the two children LOOKED down the street when they HEARD the fire siren."

S, 1FKA + 2IUC

A, 1FKA + 2IUC

4. If a Physical (P) or Verbal (V) interaction occurs between two or more characters, the scoring symbol for the character initiating the activity is shown, followed by the letter P or V depending on the class involved, then a

sideward V (>), and finally the scoring symbol for the character toward whom the activity is directed.

"I PUNCHED this guy in the stomach and he CONNED WITH AN UPPERCUT to my jaw."

D P > 1MUA
1MUA P > D

5. When the Physical or Verbal interaction does not have a clearly defined initiator and recipient, they are called mutual activities and are scored by placing an equals (=) sign after the P or V.

"The doctor and I HAD A LONG TALK TOGETHER about my mother's condition."

D V = 1MOA

Scoring Rules

1. In order to be scored, an activity must be described as a current or completed activity. Do not score contemplated or anticipated activities. The latter are indicated by such terms as would, could, should, might, etc.

2. A continuous sequence of similar actions performed by the same character is scored as one activity.

"I was TALKING to my young son. I asked him what he did in second grade that day. When he didn't answer, I asked him again. Finally I asked in a very loud voice and he REPLIED, 'Nothing much.'"

D V > 1MAC
1MAC V > D

"The pitcher THREW the ball and the umpire YELLED, 'Ball one.' The pitcher threw again and the umpire called it a strike. The pitcher threw three more times and the count was three and two. Then the pitcher threw once more and the umpire yelled, 'Strike three.'"

P, 1MOA
V, 1MOA

3. A sequence of activities performed by the same character and belonging to the same class are scored as separate activities if they involve different activities.

"I WALKED into the bathroom, TURNED ON the light, TOOK A SHOWER, SHAVED, BRUSHED my teeth, and then COMBED my hair."

M
P
P
P
P
P

4. If activities belonging to the same class are separately engaged in by different characters, they are scored as separate activities.

"I was WALKING down one side of the street and Mary was WALKING down the other side of the street."

M
M, 1FKA

5. If activities belonging to the same class are jointly engaged in by different characters, they are scored as a single activity.

"Mary and I were WALKING down the street TOGETHER."
M, D + 1FKA

6. If the same character engages in interactional activities with different characters, separate activities are scored.

"I was TALKING to my mother and then my father CAME HOME and I began TALKING to him."

D V > 1FMA
L, 1MFA
D V > 1MFA

"I SHOOK HANDS WITH my uncle John, then WITH my uncle Henry and then WITH my cousin Jim."

D P = 1MRA

D P = 1MRA

D P = 1MRA

7. If intervening events occur, separate activities are scored even though they involve identical activities, identical characters, or identical interactional patterns.

"My sister and I WENT FOR A WALK in the woods. As we turned down one trail, we SAW two squirrels. One squirrel was RUNNING along a branch and the other was CRACKING a nut. I HEARD a bluejay and CALLED to my sister to listen. We both LAUGHED at the sound. We then CONTINUED OUR WALK."

M, D + 1FTA

S, D + 1FTA

M, 1ANI

P, 1ANI

A

D V > 1FTA

E, D + 1FTA

M, D + 1FTA

APPENDIX F

SUMMARY OF SIGNIFICANT DIFFERENCES AMONG DREAM CONTENT VARIABLES FOR NIGHTS, RNR, AND GROUPS

Nights

Dreamers dreamed more of objects in Nature and Ambiguous Questionable settings on Night 4, more about Parents and Media (movies, plays, tv, slides, and photos) on Night 2, and had more Metamorphosis of objects, characters, and settings on Night 3. When the control night was compared with the two experimental nights, dreams with Media content ($p < .02$) were more common on Night 2, while dreams mentioning Glass, Sunglasses, Nature objects, Outdoor Familiar settings, Prominent characters ($p < .05$), and Repetitious events ($p < .05$) were more common on Nights 3 and 4.

Recallers-Nonrecallers (RNR)

Recallers dreamed more over all nights of Indoor Familiar settings and their Brothers ($p < .02$) than Nonrecallers, while Nonrecallers dreamed more of settings that were Ambiguous Uncertain and mentioned more feelings of Confusion ($p < .05$) and more Eyes than Recallers. When the night before the presleep stimuli was compared with the two nights after, Nonrecallers also dreamed more about non-human, non-animal Creatures than Recallers, while Recallers' dreams

contained more Babies ($p < .05$) and Stairs.

Groups

In view of the small n in this study and the personality differences implicit in groups of dreamers unmatched except for recaller-nonrecaller status, it is not surprising that there were some differences among Groups over all nights. Group III dreamed more of Brothers and large gatherings of both sexes (Joint Sex; $p < .05$) and expressed more Apprehension ($p < .05$) and Sadness ($p < .02$) than Group II; Group III also dreamed more of Brothers and Telephones than Group I. When Nights 3 and 4 were combined, Group III had more feelings of Anger ($p < .05$) than the other groups. Group III had more dreams with Music than Group I, while Group II had more Stairs in their dreams than Group III.

Nights X RNR

The major pattern evident in the Nights X Recaller-Nonrecaller interaction was a marked increase of certain categories on Night 3 for Nonrecallers, while Recallers decreased on that night. Nonrecallers were Happier and more Vigorous and dreamed more of buildings or rooms connected with Vocational pursuits and mentioned the Head or parts of the face more often on Night 3 than on any other night, while the opposite was true for Recallers. At the same time Nonrecallers had more dreams with Ambiguous

Questionable settings and dreams in which they felt No Emotion on Night 3 and Recallers had fewer No Emotion dreams on that night. Nonrecallers' dreams of Teenage characters declined over the three nights, while Recallers, who dreamed not at all of Teenagers on Nights 2 and 3, dreamed more of Teenagers on Night 4 than Nonrecallers. In addition, when Nights 3 and 4 were combined, Nonrecallers dreamed more on Night 2 of objects having to do with Communication ($p < .05$) than Recallers, although Recallers dreamed more specifically of Telephones than Nonrecallers on Nights 3 + 4 and also of Residences ($p < .05$) and Animals on the last two nights.

Two of the differences between Recallers and Nonrecallers on the three nights were possibly confounded by women (4 Recallers, 2 Nonrecallers) dreaming more of Ambiguous Questionable settings ($p < .02$) and men (2 Recallers, 4 Nonrecallers) dreaming more of Teenage characters ($p < .10$). No other differences between the sexes were significant for Recallers and Nonrecallers or interactions with nights and groups. Some trends noted were that women dreamed more of Indoor Familiar settings and Institutions, and expressed more Sadness, while men dreamed more of Residences, objects of Communication, Travel, and Cutting activity, and expressed more feelings of Confusion and Vigor.

Nights X Groups

There were some differences among the three groups

dependent upon nights. Dreams of Food (and drink) and dreams with feelings of Anger increased over Nights 2, 3, and 4 for Group I and decreased over nights for Group III, which began with significantly more Anger on Night 2 than Group I ($p < .01$). Group III had their highest mean scores on Night 3 for places and conveyances connected with Travel, Regions (with limited boundaries), limited Physical movements, and Verbal activity, while Groups I and II had their lowest mean scores on those variables on that night. Group I increased significantly on Night 4 on Physical movement and Verbal activity. Group III also dreamed more of Mother ($p < .01$) on Night 3 than on any other night. Group II dreamed more of places of Entertainment on Night 2 than on Nights 3 and 4. Group I did not have any Teenage characters or Telephones in their dreams. Group II dreamed more of Telephones and Teenage characters on Nights 2 and 4 than Group III. There were several significant differences between Group I and Group III when Nights 3 and 4 were combined. Group I had more dreams and Group III fewer dreams of Food ($p < .05$), Babies, Chasing, and Angry feelings on Nights 3 + 4, while dreams of Travel ($p < .02$) were in the reverse direction for the two groups. Group III dreamed more of Institutions, e. g., hospitals and churches, on Nights 3 + 4 than on Night 2 ($p < .02$) and both Groups I and III dreamed more of Prominent characters on Nights 3 + 4. Groups I and II did not dream of non-human,

non-animal Creatures on Night 2, but both groups dreamed of more Creatures on Nights 3 + 4 than Group III which decreased from Night 2. Group III dreamed more of large groups of people, i. e., Joint Sex ($p < .05$) on Nights 3 + 4 than Group II.

RNR X Groups

It made a difference on eight variables whether Recallers and Nonrecallers were in Groups I, II, or III. Recallers in Group III dreamed more of their Brothers than all other RNR-Group combinations ($p < .02$) and more of Telephones than Group I Recallers and Nonrecallers and Group III Nonrecallers. The Nonrecallers of Group III expressed more Sadness ($p < .01$) in their dreams than either Nonrecallers in Groups I and II or Recallers in Group II and dreamed more of Institutions than Group II Recallers. Dreams of Travel and Sisters were more numerous for Nonrecallers in Group II than for Nonrecallers in Group I. With scores from Nights 3 and 4 combined, Group III Recallers were also higher than Nonrecallers of the same group in dreams with Cutting activity and had more dreams with changes of Location than Nonrecallers of Group I.