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The Dream-Scriptor and the Freudian Ego: "Pragmatic Competence" and Superordinate and Subordinate Cognitive Systems in Sleep

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On the basis of theoretical and anecdotal literature, as well as a systematic experiment, a study is made concerning the appropriateness in using verbal language as part of the overall dream scenario. Of particular interest is whether the automaticity of grammatical processes—to which can theoretically be attributed the general syntactic well-formedness of dream dialogue (as recalled and reported)—may also contribute to these processes becoming divorced in sleep from superordinate control systems. An experiment is related in which dream reports were scored for the appropriateness of dialogue to an overall narrative, with results strongly indicating that the dreamer displays a rather high degree of pragmatic competence as well as grammatical proficiency. In this light, recent attempts to reinterpret Freud's dichotomy of primary and secondary processes and their theoretical shifting relationship from states of wakefulness to dreaming are themselves critically reexamined.

Freud was fond of the theatrical metaphor when discussing dreams and their production. In the *Traumdeutung* (1900/1978a) he likens the dreamer to a "popular dramatist" (p. 572) and in later works he credits the "dreamwork" with "condensation, displacement and *dramatization* [italics added]" (1901/1978b, p. 685) and writes of dream characters "playing the . . . part in their scenes" (1915/1978e, p. 223). Yet, although Freud also followed developments in photography and made use of the camera metaphor in developing his model of the psyche, he long eschewed any comparison between dreams and motion pictures, and explicitly writes to Abraham in 1925, "I do not believe that satisfactory plastic representation of our abstractions is at all possible" (Freud and Abraham, 1965, p. 384). This may well have been due to the fact that "movies" were not yet "talkies." For Freud was aware—perhaps more so than any other dream theorist before or since—that, to cite Charles Dickens, "language has a great part in dreams . . . the head is usually full of words" (quoted in Skinner, 1957, p. 393). He explicitly recognizes that

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the dreamer is not only producer/director, but also "script-writer." In analyzing one of his own dreams, Freud (1900/1978a) discusses the actions of a character "*into whose mouth I put the . . . phrases in the dream* [italics added]" (p. 575).

Elsewhere (Heynick 1983a, in press), I deal with the grammaticality, creativity and complexity of dream dialogue and monologue as indications of the *grammatical proficiency* of the human language faculty during dreaming. In the present article, I wish to go beyond grammatical competence to consider *pragmatic competence*, or in Chomsky's (1980) words: the "knowledge of conditions and manner of appropriate use [of grammatical competence] in conformity with various purposes" (p. 224). In terms of the theatrical or (talkie) cinematographic metaphor, pragmatic competence during dreaming would mean the underlying ability of the dreamer-as-scriptwriter to "put into the mouths" of the hallucinated co-stars, as well as into his/her own, utterances which, when judged by standards of wakeful pragmatic competence, are deemed appropriate to the context of the scenario (regardless of whether that scenario be commonplace or fanciful).

In a later section, an experiment involving the analysis and scoring of 77 dream reports, containing a total of 205 lines of conversation spoken between the actors in the dreams, will be presented. This experiment represents, to our knowledge, the first systematic research designed specifically to test the functioning of the speaker-hearer's pragmatic competence during dreaming. Before considering the experiment and its results, however, a review is made of the existing scientific literature on cognitive functioning in sleep, where this may relate to verbal pragmatic competence. It will be remarked that a thread running through the relevant literature is the issue of superordinate cognitive control systems and potentially automatic subordinate systems.

The first section below summarizes Arkin's (1981) survey of (neo)dissociationist theories relating to the language faculty and other cognitive faculties during sleep, especially as this involves shifting dominance relations between higher (executive ego) and lower systems, and the potential autonomy of speech and language mechanisms. References are also made to possible neurophysiological concomitants. In a similar vein, the second section reviews recent contributions to the revision of Freud's dichotomy between the *primary process* (which, according to the classical theory, is subordinate and largely supressed in normal wakeful cognition) and the *secondary process* (which in waking life is superordinate and inhibits the primary process), and considers the supposed shifting in their dominance relations and their interactions in sleep. In the third section, a brief survey is made of the largely anecdotal remarks of historical writers (all German), and of some more recent authors on dream speech, to the extent that they consider the appropriateness by wakeful standards of dream dialogue to the dream scenario. Attention is paid to the (non-systematically assembled) dream dialogue specimens supplied in

the *Traumdeutung* and in more recent dream interpretation books. Various numerical compilations are provided, indicating, among other things, the frequency of the appearance of dialogue in reported dreams. It will be remarked that there is in the historical and recent literature little agreement to be found concerning pragmatic competence (and that in the case of Freud, there seems to have been a lack of consistency of opinion on this issue even within the same work): an uncertainty which has motivated the systematic research presented in the subsequent sections.

Sleep Speech and the Dissociation of Language from Other Cognitive Processes

The late Arthur M. Arkin's monumental work *Sleeptalking* (1981), although dealing primarily with somniloquy (the phenomenon of actually articulating aloud in one's sleep), variously extends its scope to cover sleep speech in the sense of hallucinated verbal material in dreams. Being the first book since Kraepelin's work (1906; see the next section) dedicated to the study of the interaction between speech and other cognitive processes during sleep, it is worthy of special attention, especially to the extent that it considers instances where the interaction in question is characterized by strong dissociation.

It should be noted that mention is made in several places in the present and the next section of the automatic nature of speech mechanisms (see also Heynick, in press). It appears that the former aphasiologist Freud, in formulating his dream model, was perhaps overly prone to equate the generation of grammatical sentences with (conscious) "intellectual operations," whereas recent psycholinguistic research points ever more strongly to sentence construction as functioning predominantly independent of attention. A point at issue in this and the following sections will be whether the autonomy of grammatical proficiency which permits the generation of apparently well-formed utterances in dreams may not, by the very nature of its independence, also lead to an apparent lack of pragmatic competence during dreaming: a dissociation from some superordinate cognitive faculties.

After surveying historical and recent comments in the sleep research literature, Arkin presents the results of his own experiments on sleeptalking, in which instances of somniloquy recorded in the laboratory were followed by provoked awakening of the subject and the elicitation of mentation reports by the experimenter. Arkin points out that approximately only half of the mentation reports from REM sleep thus elicited show an obviously discernible ("first or second order") concordance with the content of the previous articulation, even though both the sleeptalking and the mentation reports are usually quite ample. (Furthermore, the proportion of first and second order concordance drops to around a quarter for NREM awakenings.) In terms

of the theatrical/cinematographic metaphor, it would appear that even in full-fledged dreams, the lines which the dreamer scripts and even overtly articulates may be divorced from the context of the scenario he or she is hallucinating.

In discussing this rather anomalous phenomenon, Arkin cites West's (1967) clinical review of the phenomenon of "psychic dissociation," said to occur when integration with the normal network of associations is impeded in the case of outgoing information (as in sleeptalking, parapraxes, and automatic writing), stored information (as in dreams and hallucinations), and incoming information (as in daydreaming and reverie). Hilgard's (1973, 1977) more recent *neodissociationist theory* is quoted extensively by Arkin as being particularly relevant to somniloquy. The theory's basic assumption is that "the unity which exists in personal cognitive functioning is somewhat precarious and unstable." An executive ego is seen as providing "a basis for self-perception and for conceiving the self as an agent" (p. 405). Hilgard writes:

> There are many subordinate control systems that represent fractions of total cognitive functioning. It is proposed that these structures have at any one time a hierarchical arrangement, but that their hierarchical positions can shift. For example, the cognitive control system that produces dreams is more prominent than it is in waking, though it is doubtless present at a lower level in waking also, as in daydreams and fantasy production generally.
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> Once a system is activated, it may extend its controls *autonomously, even though a subordinate system* [italics added]. [Furthermore,] each of the subordinate cognitive control structures is . . . related to a system of inputs and outputs, with feedback arrangements. As a control or monitoring system, the structure can seek and avoid inputs and enhance or inhibit outputs. (Quoted in Arkin, pp. 285–286)[1]

Arkin comments: "During slumber, the sleep executive ego acquires ascendency over its wakeful counterpart. Its related subordinate semiautonomous cognitive systems include those mediating imagery, covert utterances [i.e., *hallucinated* lines of dialogue/monologue], overt utterances

[1]West's and Hilgard's references to incoming information in their schemes relate to a peripheral point, which will not be further discussed in the present article: the sleeper's response to real external stimuli. Arkin (Ch. 12) summarizes the anecdotal literature (dating back to Aristotle) on dialogue between sleeptalkers and wakeful observers, and he notes that the sleeptalker may hold up his/her end of the conversation with responses ranging from irrational and irrelevant to logical and to-the-point. The meager laboratory findings are equivocal on this issue. As for non-sleeptalkers: experiments reported by, among others, Oswald (1966, Ch. 1), Dement (1974, Ch. 4), and most recently by Kramer (1983) indicate that verbal stimuli presented during REM sleep in the form of meaningful and familiar names are more likely to find incorporation into the subsequently elicited mentation reports than are non-meaningful and unfamiliar names. (See also considerations of word-deafness in light sleep, in Heynick, 1984.) Experimentation which goes beyond the S→R paradigm of one-word input→mentation report output is problematical, and there is as yet little to report on attempts to measure the EEG reactivity during various sleep stages to short sentential stimuli of differing informational value (Koukkou, Mueller, and Lehmann, 1982).

[i.e., sleeptalking articulated out loud], and memory" (p. 286). Hilgard's literature review draws upon Freud and Breuler's (1893–95/1978) studies on hysteria and more recent writings on psychoanalytic ego psychology: Gill and Brenman's (1959) concept of separate ego structures subordinate to a dominant ego; Rapaport's (1960) idea of a hierarchy of psychic structures; Hartmann's (1964) concept of various ego apparatuses in the conflict-free ego sphere. These concepts are considered by Arkin to be "basic to Freudian psychology," since in them "the mind is conceptualized as being constructed of descriptively unconscious and conscious interactive components with widely ranging degrees of independence, interrelatedness and hierarchical organization in which the various components have subordinate and superordinate relations to one another, in themselves subject to change over time" (p. 288).

With regard to physiological concomitants, Arkin cites the studies of Penfield and Roberts (1959), and relates Schaltenbrand's (1975) argument that thalamic activation may be involved in the releasing and terminating of practiced speech patterns (as opposed to the actual synthesis of sentences and propositional, abstract expressions), and that sleeptalking may therefore issue from selective thalamic activation. With regard to cortical hemispheric dominance, Arkin cites the literature going back to the studies by Hughlings Jackson (1874) that the major ("left") hemisphere is "chiefly responsible for verbal, linear, logical, linguistic processes, especially propositional speech, and that the nondominant hemisphere is essentially without capability of significant speech production" (p. 297). Arkin notes however that Jackson allows that the minor ("right") hemisphere could produce, nonpropositional, *automatic, overlearned* phrases (a discussion of Freud's "replay hypothesis" of dream speech will be presented later) and updates this with Searleman's (1977) evidence that the right coritical hemisphere is capable of limited speech output. Arkin suggests that the aphasic-like speech characteristic of much sleeptalking, and (supposedly) of much hallucinated dream dialogue as well, may result from periodic lateral shifts in hemispheric balance during sleep (Van Valen, 1973).

More relevantly for the concept of dissociation, Arkin points to the clinical evidence regarding commissurotomization between the hemispheres (Sperry, 1973) which results in "complex cognitive activities mediated by the [right] hemisphere which are conducted independently and outside of the domain of awareness of, and unavailable to verbal encoding by, the [left] hemisphere" (p. 297). Arkin suggests that "a loosening of integration in sleep between intrahemispheric levels of activation and diminished commissural mediation of interhemispheric cortical dominance factors" may result from shifting activity in the neural channels of the corpus callosum (p. 298). This incoordination may thus manifest itself in overt sleeptalking which is unrelated to mentation reports.

Finally, Arkin treats the concept of *microgenesis* (German: *Aktualgenese*) of thought, which he regards as reconcilable with, and indeed complementary to, the theory of neodissociation. According to Flavell and Draguns (1957), at the early stage of the thought generation process, the principles governing the combination of global, diffuse, undifferentiated fluctuating sets of psychological items are similar to those of Freud's (1900/1978a) primary process, whereby association is characterized by condensation and displacement based on contiguity and superficial external similarities. As thought achieves final form, after passing through a dichotomous fashion of expression, such primary process components are aborted in favor of reality-oriented mentation. Many schizophrenic verbalizations can thus be viewed as a final product of what would normally only be a transitory phase in thought development—a phase which might also characterize the end product of speech of normal persons under atypical or abnormal conditions.

Although Arkin's discussion of the dissociation of the speech generation process from other cognitive processes is centered around articulated ("overt") sleeptalking, we have seen that the scope is also extended in principle to "covert" sleep speech, i.e., hallucinated dream dialogue. In terms of the cinematographic metaphor: it would appear that the selfsame "automatic" nature of sentence production which allows the scriptwriter to generate largely grammatical lines of dialogue/monologue, also allows that these lines be dissociated from the dream context, in that the scriptwriter may operate independently of the director/producer, or *executive ego*.

While Arkin, as we have mentioned, supplies large corpora of his own, and other, laboratory-recorded sleeptalking instances along with corresponding mentation reports, he in fact provides no specimens at all of recalled hallucinated dream dialogue which has been assembled under experiment conditions. The whole book contains no more than a handful of instances of covert dream speech, including one from Freud (1900/1978a). Arkin devotes a chapter exclusively to reviewing two previous theoretical articles by the present author, which included the results of a pilot experiment indicating a high degree of syntactic well-formedness for dream speech. For counter-examples, Arkin refers to specimens presented by Werner and Kaplan (1963), viewing these as indicating the incomplete microgenesis of hallucinated dream speech. However, Werner and Kaplan in turn drew almost exclusively from Kraepelin (1906) for their examples. In the next section, a far wider-ranging survey is made of pragmatic competence in the (admittedly scanty) historical literature, and in more recent dream interpretation books, looking for indications of dissociation of the scriptwriter from the director functions. This survey includes Kraepelin, but also several other authors, and involves the analysis of over two hundred dream reports in the literature.

First, however, another essential concept in the literature on cognitive pro-

cesses in sleep needs to be reviewed. This is Freud's dichotomy between primary and secondary processes, which has already been brought up in the present section in connection with microgenesis. (For consideration of the place of primary and secondary processes in the classical psychoanalytic dream theory, the reader is referred to Heynick, 1981a, 1981b, 1985.) This concept, too, is strongly related to the issue of subordinate and superordinate cognitive systems.

Revisions of the Dependency Relationship Between Freud's Primary and Secondary Processes in Wakefulness and Dreaming

Dichotomous formulations are known to characterize Freud's theorizing on the psyche, particularly the dualities of the systems *Unconscious* and *Conscious* and their respective theoretical functionings: the primary process (nondiscursive, imagistic, prey to condensation, displacement and symbolization, and supposedly characteristic of an infant's mode of thinking before the acquisition of speech); and the secondary process (respecting the laws of grammar and formal logic, and in the course of ontogenetic development suppressing the primary mode out of consciousness). Strachy (1953/1976) calls this duality of mental functioning "probably the most monumentous of the discoveries given to the world in *The Interpretation of Dreams*" (p. 39, cf. Jones, 1953, p. 397).

In redefining the operations during dreams of *id* and *ego* (the successors to the systems conscious and unconscious in Freud's tripartite structural model) and delimiting their respective contributions to dream synthesis, Gill (1967) emphasizes the kinship between the Freudian conception of the hierarchy of systems (as Gill interprets it) and the Jacksonian concept of superordinate inhibition, by which the higher system inhibits the lower one and whereby only the release from inhibition by the superordinate system can permit the subordinate system to come into play. Freud's (1905/1978d) view is noted, that the primary-process mechanism of condensation arises "*automatically* [italics added] without any particular intention, during thought processes in the unconscious" (p. 169), although this automatic mechanism can be placed at the disposal of motivated consciousness when "the thought which, with the intention of constructing a joke, plunges into the unconscious . . . seeking there for the ancient dwelling-place of its former [infantile] play with words" (p. 170). Similarly at night, Freud (1923/1978g) writes, "the unrecognizability, strangeness and absurdity of the manifest dreams are partly the result of the translation of the thought into a different, so to say archaic, method of expression" (pp. 241–242). He quickly adds, however, that such dreamwork distortion is also "partly the effect of a restrictive, critically disapproving agency in the mind, which does not entirely cease to function during sleep" (p. 242);

that is, the dreamwork is motivated for the avoidance of censorship and unpleasure similarly to the way in which the jokework is motivated for the attainment of pleasure.

Gill continues:

> Functioning purely according to primary-process mechanisms is a theoretical fiction. The inhibition imposed by a superordinate structure can never totally disappear. One can therefore see the mechanisms of the underlying structure in operation only as they are influenced by some persisting inhibition by the superordinate structure. It is never the primary process as such which one sees, but products of its mechanisms in the context of the dreamwork, jokework, symptom formation, or whatever other compromise function results from the interplay of the inhibited and the inhibiting forces. (1967, pp. 287–288)

In concluding, Gill cites Freud's (1900/1978a) statement (highly relevant to the "replay hypothesis") that "everything that appears in dreams as the ostensible activity of the function of judgement is to be regarded not as an intellectual achievement of the dreamwork, but as belonging to the material of the dream-thoughts and as having been lifted from them into the manifest content of the dream as a ready-made structure" (p. 445; see Heynick, 1981a). Gill comments that this is "the typical beginning of any major new concept; to focus on a new discovery one must make it unique and sever its relations with the more familiar" (p. 293).

Holt (1967) similarly notes the traditional view that the sleeping state permits a "change from the relative dominance of the secondary process . . . the regressive undoing of a developmental progression" (p. 345). He then goes on to argue not so much that dreams and the like represent only a partial lifting of secondary process inhibition (as argued by Gill), but that in fact the primary processes themselves are far more structured than is generally recognized. Despite Freud's (1933/1978h) well known description of the id as "a chaos, a cauldron full of seething excitations" and, by extention, the primary processes which govern—or do not govern—it as "without organization [or] logical laws of thought" (p. 73), Holt emphasizes that:

> One of Freud's greatest achievements was the discovery that there was *meaning* where the predominant view saw only random error. He was able to elucidate hidden intelligibility in what was probably considered crazy and senseless, by discerning recurrent regularities, thus recognizable and interpretively reversible operations of thought. It is difficult to imagine how an inner order can be achieved and maintained without enduring structural means. (1967, p. 351)

Holt cites Rapaport's (1960) assertion, similar to Gill's above, that "all thought forms [including dreaming] involve primary and secondary processes, but differ from each other in the kind of synthetic function they involve; that is to say, they differ in the degree of dominance the secondary process achieves

over the primary" (p. 241). But Holt then argues that basic units of primary process functioning may be structured even without the need to assume an admixture of secondary process functioning. In a passage replete with linguistic metaphors, Holt concludes:

> Freud's view was not only that determinism must be assumed to apply to all corners of psychology, but that the functioning of the unconscious or the id was something like an ancient, secret *language*. Its *grammar* was strange and perverse, yet it did follow rules that he could formulate, and with the aid of a symbolic *dictionary* to its *vocabulary* he taught us to *translate* [all italics added] so that sense could be made out of what others had considered inherently senseless. (p. 383)

Noy's (1969) suggestions for revising the psychoanalytic theory of the primary process similarly emphasizes that "the two 'levels' of primary and secondary organization are only a continuum, which results from the inhibition-disinhibition of hierarchic psychic functions" (p. 156). He advocates the abandoning of unconsciousness as a criterion for defining the primary process and suggests formally distinguishing the secondary processes as "all the mental processes that are monitored and dependent upon constant feedback information" (at least for their *development and maintenance*, if not always for their actual functioning), while the primary processes are "all those processes that are not dependent on such feedback" (p. 161).

Speech, according to such criteria, is of course a secondary process. Not that its functioning need be fully conscious as opposed to automatic, but rather in that it is dependent on feedback for its ontogenetic development (consider the difficulties of a deaf child in learning to speak), and that it need be monitored. A slip of the tongue immediately comes into awareness (becomes the focus of attention), that it may be corrected.

Instead of being strictly identified with the unconscious, the feedback-independent primary processes may, Noy states, be subdivided across four categories: (a) both the process and its product are unconscious (as in some neuroses and psychoses); (b) the process is unconscious, but the product is conscious; (c) the process and its product are conscious, but the former only ex post facto; (d) both the process and product are conscious and controlled (as in some art forms). As an example of the second category, Noy writes: "We remember that in the dream . . . a strange word or sentence appeared, but we do not discover that this product is a condensation . . . of several familiar words. If it is interpreted to us, we may accept it, but it remains as something 'not belonging to me' and we do not feel as if it were our own achievement to distort the . . . words in such a way" (p. 165). This Noy contrasts with wakeful "Freudian slips" of the third category: "In speaking, an unplanned word or sentence intrudes into speech. We are aware of the mistake and many times are also able to identify the word rather easily as a conden-

sation of two known words, or as the reversal of a word, etc. In these cases, when we become aware of the mistake, we immediately correct it or apologize for it, i.e., consciousness is used in order to correct the results of our mistake" (p. 165).

In an update, Noy (1979) rejects as too mechanistic this strict equating of secondary processes with dependence on feedback for maintenance and development. Noy's new definition links the secondary and primary processes with reality orientation and self-centeredness, respectively. He sees the secondary processes (or, in terms of more recent psychoanalytic ego psychology, the *autonomous ego functions*) as characterized not so much by dependence on feedback, as by "freedom from the necessity to respond automatically to feedback information," the capacity for a given program to "program itself by itself" (pp. 203–204), or the ability of thought to "think about itself" (p. 201; note also Heynick, 1985, where such concepts are traced back to Freud's *Project*).

Such reflection, which is largely absent in dreaming (see especially Heynick, in press, and Rechtschaffen, 1978) is closely linked to the ability to use language (both the sign system and the syntax) and the corresponding "propositional logic" in the course of ontogenetic and phylogenetic evolution. Specifically, as Noy writes, "the development of language as a socially shared communication system has a reciprocal influence on the development of secondary process thought, whose operational patterns and rules of organization must be adapted to those which govern language" (p. 205; see also Heynick, 1983b).

A somewhat extended definition is advanced of *secondary revision*, that final part of the dream generation and recall process "whose business it is to make something whole and more or less coherent out of the first products of the dreamwork" (Freud, 1915–17/1978f, p. 182) and which will come in for discussion in the fourth section, below (see also Heynick, 1981a). Noy writes: "Inner needs and wishes which are first processed according to the primary mode undergo 'secondary revision' into secondary-process-organized categories. . . . The process of secondary revision can be demonstrated in the attempt to verbalize dreams or to articulate an emotional experience" (p. 181). In a similar vein to his 1969 article, Noy states that in the case of dreams and (wakeful) parapraxes "and all other primary process operations . . . we may be fully aware of the products, but never the underlying process which produces them" (p. 202). And as in the previous article, Noy makes specific, if only passing, remarks about speech in dreams. Here, he cites Freud's replay hypothesis and goes on to quote a remark by Fisher (1954) that "it is entirely possible that the dreamwork cannot compose a new *visual* structure any more than it can a new speech" (p. 422). Noy places the replay hypothesis in an extended context (similar to his broadened definition of secondary revision) when he comments: "this, however, does not mean that the dreamwork, by

its process of condensation, displacement, and reversal, cannot project a seemingly new creation on the 'inner screen'; what it means is that if we examine the components of the new images carefully, we will see that *all* of them always derive from personal experience" (p. 185). This is in keeping with Noy's above-mentioned dichotomy: the "reality-oriented," secondary-process nature of (wakeful) verbal communication with its reflectiveness versus the "self-centered" and "autistic" primary-process nature of dreaming.

The two articles by Noy are exceptional in that they indeed make some reference, however briefly, to speech in dreams. The other revisionists are, unlike Noy (and unlike Freud himself), seemingly deaf to dream speech, even though the study of this phenomenon, which by its nature represents a peculiar interplay of theoretically dichotomous mechanisms, would seem of value in delimiting the functioning of primary and secondary processes. However, although most of these authors do not address themselves directly to dream speech, their proposed revisions to the theory of primary and secondary processes, and to the structures of the id and ego respectively, are not without implications as to what dream speech should be like (granting that it exists at all): implications which can be checked against anecdotal data from the existing literature and empirical data from experimentation.

Pragmatic Competence in the Literature

In Freud's dream model, the dreamer generates dialogue without in fact making use of an underlying grammatical proficiency. Utterances heard or said in waking life and recorded, as it were, in the memory archives (preferably on the previous day) are played back in the dream, with at most some "splicing." With this formulation, which I have termed the *replay hypothesis* (see Heynick 1981a, 1981b), Freud—apparently drawing upon his previous studies *On Aphasia* (1891/1953), in which is shown how in extreme cases of functional disinvolution of the speech apparatus, certain phrases may be preserved and repeated even when all other linguistic skills have been rendered inaccessible (see Heynick, 1985)—attempted to resolve a theoretical dilemma. Language, the common secondary process phenomenon of everyday life, is now viewed as being regressed during sleep to the ontogenetically most primitive, mimicry stage, lacking all "linguistic creativity," and as such being compatible with the primary process framework of dreaming.

As reported in connection with another experiment, involving the analysis of 580 lines of dialogue from as many dreams (Heynick, 1983a, in press), very little empirical support seems to be forthcoming for the replay hypothesis: only a modest 8.0% of the utterances were deemed by their respective dreamers to have been derived from verbal residues of the day before. We may jump ahead slightly to mention here that in the present experiment, the replay

hypothesis certainly fares no better. In the case of only 3 (3.2%) of the 95 immediately recalled, direct form utterances (see the next section; this includes specimens not pooled in the analysis below) for which the question of the replay was asked, did the respective dreamers make a distinct connection with conversation of the day before the dream. (The difference between the two percentages may be due to the fact that in the first experiment the subjects were allowed an indefinite amount of time in the morning to reflect upon the utterances.)

Be this as it may, the lines of dialogue and monologue presented in Freud's own dreams and those of his patients generally show an appropriateness to the context which would indicate that the dreamer/scriptwriter is drawing upon an underlying pragmatic competence, even in the theoretical absence of grammatical proficiency. By an apparently associative process, on which Freud nowhere satisfactorily elaborates, these replays, which may be composites of more than one recording, spliced together with the aid of a secondary-revisor/editor, are somehow well scripted into the scenario. Freud (1900/1978a) does however remark that conversations in dreams may be "reasonable or unreasonable in themselves" (p. 418), and on occasion he expressly points to manifest inappropriateness, as in the following two excerpts:

> . . . A female figure—an attendant or nun—brought two boys out and handed them over to their father, who was not myself. The elder of the two was clearly my eldest son; I did not see the other one's face. The woman who brought out the boy asked him to kiss her good-bye. She was noticeable for having a red nose. The boy refused to kiss her, but, holding out his hand in farewell, said [!]"*Auf Geseres*" to her, and then [!]"*Auf Ungeseres*" to the two of us (or to one of us). I had a notion that this last phrase denoted a preference. (pp. 441–442)

From another of Freud's dreams:

> A castle by the sea. . . . We feared the arrival of enemy warships, since we were in a state of war. Herr P. intended to leave and gave me instructions as to what was to be done if the event that we feared took place. . . . If the bombardment began, the great hall was to be evacuated. He breathed heavily and turned to go; I held him back and asked him how I was to communicate with him in case of necessity. He added something in reply, but immediately fell down dead. No doubt I had put an unnecessary strain upon him with my questions. . . . Then my brother was standing beside me and we were both looking out of the window at the canal. At the sight of the ship we were frightened and called out: "*Here comes the warship!*" But it turned out that it was only the same ship, cut off short, in a comic fashion, in the middle. On its deck some curious cup-shaped or box-shaped objects were visible. We called out with one voice: [!]"*That's the breakfast-ship!*" (pp. 463-464)

The manifestly inappropriate utterances, preceded by a [!] in the above transcriptions, are subjected by Freud to detailed analyses similar to his analyses of parapraxes in wakefulness in *The Psychopathology of Everyday Life*

(1901/1978c). And, as in the case of wakeful slips of the tongue, dreaming slips prove, according to Freud, not to be the results of "deep-seated decay in mental activity or pathological states of functioning," but rather "the peculiar mutual interference between two or several correct functions" (p. 343).

Kraepelin's monograph *Über Sprachstörungen im Traume* (1906) comes in for detailed consideration in the introduction to my forthcoming translation. A large proportion of the 282 specimens Kraepelin provides (assembled in a highly selective manner, primarily from his own dreams) are likened by the author to schizophrenic speech, due to their semantic deviance; and indeed they display the characteristics of "semi-sentences" (Wales and Marshall, 1966). However, the contexts in which these are made are never provided in detail, apparently due in part to these specimens having been drawn largely from hypnagogic dreamlets, and therefore lacking in scenarios. Kraepelin's investigation is consequently of peripheral importance to the study of dreams in the strict, REM(-like) sense (cf. also the primary-process-like hypnopompic utterances in Mintz, 1948).

Höche's (1926) investigation into dream speech was inspired by Kraepelin's study, and the corpus is drawn entirely from the dreams of the experimenter himself. Although Höche provides several computations in classifying his 700 dream utterances, he supplies (in contrast to Kraepelin) few actual specimens, and (in keeping with Kraepelin) virtually no contexts.

Hacker (1911), under the heading "Die Sprache im Traume," similarly refers to Kraepelin. In constrast to Kraepelin and Höche, however, he provides virtually no computations, but does supply nine dream scenarios, of various lengths, containing lines of dialogue. Since these specimens were intended to illustrate the general phenomenon in dreams of the "dissociation of presentations [*Vorstellungen*] and thought," they are all deemed to be in some respect inappropriate to the overall scenario. One of the specimens is particularly worth quoting in full, since it shows the dominant and sometimes intricate rôle which dialogue can play in dreams:

> To celebrate my stepmother's birthday, I wanted, together with my brother and a friend, to roast an ox, and indeed a whole one. So that no one would see it beforehand, we hid it under a sofa. Since a leg could still be seen, I tried to shove it under, but then the head stuck out. At that moment, my stepmother came in and, seeing the ox, she said: "*I'd rather have no party than have an animal killed because of me*". The other two considered this a very noble thought, while I was extraordinarily vexed. I called out "*Don't you know that we never could have lived in the first place, if we hadn't perpetually struggled? Isn't life a struggle of everything against everything? Let's not be taken by surprise by a sensitive skirt* [Frauenzimmer]. [!]*Man would never have evolved if there had been no wild beasts to fight against*". (pp. 46–47)

Hacker remarks that upon dreaming these last words he immediately awoke, wondering about their correctness. An instance of apparent derailment in

the word-selection process is provided by the following dream:

> I gave my grandfather, who wanted something to eat, a specially constructed eating instrument, which, so it seemed to me, combined the advantages of fork and spoon. But my grandfather said: "*A spoon which is a fork and a spoon in one doesn't exist,*" to which I said very loudly, "[!]*No, methane in a butane doesn't exist.*" (p. 50)

Another dream is cited by Hacker not for the questionable logic of the line he spoke, but its questionable propriety (see Heynick, 1981c):

> I wanted to get into a carriage. But since the people inside didn't open up, I called out [!]"*Damned bunch!*" But then I felt embarrassed at the rudeness of the expression, and because I had yelled it so loudly. (p. 46)

Basing themselves almost exclusively upon Kraepelin's corpus, Werner and Kaplan (1963) describe dream dialogue/monologue as "premature articulation." (Perhaps more appropriate would be "premature pseudo-articulation.") The short-circuiting of the normal speech production process results from a lesser "'degree of differentiation' or 'distance' between the four components of symbol-situations—addressor, addressee, vehicle, and referent" (p. 252), and shows similarities to schizophrenic speech. Since the specimens the authors provide are drawn almost exclusively from Kraepelin, no dream contexts are supplied.

Skinner (1957) makes passing reference to language in dreams, which he groups together with talking in trance states and automatic writing as non-edited, or defectively edited, since it presumably does not affect the speaker as listener. Such verbal behavior is considered "autistic" or "ego-centric." Skinner provides, however, no specimens of dream conversation within a dream scenario.

Götzinger (1972) in a comparative study of speech in the dreams of normal subjects from whom reports are elicited after provoked awakenings, and of patients reporting their dreams (after spontaneous awakening) at a psychotherapy session the next day, raises the overall question: "Is the content of [the] phrase[s] in keeping with the overall context of the dream, or does it appear to have no place in the context of the dream?" (p. 158). No specific data are provided in answer to this question; Götzinger offers the general remark that "speech emanating from the subjects . . . conforms to the picture of day-to-day speech . . . ; single clauses alternate with quite long verbal structures" (p. 158).

Cipolli, Dubois, and Salzarulo (1975), in commenting on the apparently quite efficient operation of mnemonic processes in the transition from dreaming to wakefulness in consolidating dream speech from short to long term memory, remark: "We may hypothesize that verbal activity content is so well recalled because it is in agreement with all

report content" (p. 388). No specimens or further data are provided.

Recourse can be made to the more popular literature on dreams for indication of scriptwriting. A survey of four books, Gutheil (1951), Faraday (1974), Garfield (1974), and Delaney (1979), containing dreams reported by dream-group participants, by patients in therapy, and by the authors themselves, reveals the following. Restricting ourselves to dreams given in more than seven printed lines (thereby excluding capsulized and fragmentary reports), we find, respectively, 114, 20, 18 and 25 reports. Of these, 62.3%, 90.0%, 55.6% and 80.0% contain one or more lines of dialogue/monologue reported in either "direct" or "indirect" form (terms to be defined in the next section) or otherwise make reference to conversation, thus confirming the overall importance of the verbal contribution to dream construction, while also indicating variations which may be the consequences of the purposes of reporting. All of the 244 utterances contained in these 119 dream reports appear to be syntactically well formed. Hardly any exhibit, in themselves, the primary process-like semantic anomalies characteristic of much schizophrenic speech (cf. Wales and Marshall, 1966). The best (or worst) that can be said is: A number of utterances may have evoked some surprise when viewed in the context of the scenarios (in some cases a feeling of surprise is reported as part of the dream), due either to apparent inconsistency, or, in a lesser number of cases, unusual aggressiveness or apparent creative novelty. In the tradition of such dream books, the unusual utterances are analysed as being "overdetermined" with meaning or as otherwise compensatory or wishfulfilling, and as such often pointing to conflicts below the surface. The frequency of utterances falling under this broad definition of deviance in the four books would be approximately 19%, 4%, 36%, and 21%, respectively.

The reports contained in the dream interpretation books are, however, liable to varying doses of Freud's secondary revision, since there is no standardization of the immediacy or of their manner of elicitation. This would pertain particularly to the dialogue in question within the dream, since the dialogue is almost inevitably reported in the telling of the whole dream, rather than directly upon awakening. The need for standardization and immediacy in the reporting of dream dialogue was the motivation for the experiment reported in the next section.

Experiment on Pragmatic Competence in Dreams

Method of Elicitation

The experiment involved the analysis of 77 dream/mentation reports ("scenarios"). Potential subjects were recruited by means of articles in several regional Dutch newspapers which gave general details of the experiment and

called for good dream-recallers with a telephone near their beds who would be willing to be awakened by phone on unspecified nights and at unspecified hours on an average of no more than once a week for three months. Potential subjects were told that they would not be remunerated, but would receive feedback on the results of the project. Seventy-four respondents (17 male, 57 female; ages 18–65, mean age 32.5, median age 29) were included in the experiment. These subjects had subsequently filled in and returned a detailed questionnaire regarding their sleeping schedules and the frequency and vividness of their remembered dreams.

Before the experiment began, subjects were sent an instruction sheet in which the method of operation was explained in greater detail. Some information was supplied about the difference between dreams and sleep mentation, and the fact that one does not dream the whole night through. The subjects were instructed that, when the phone would ring and if a dream/mentation would be in progress, they should do their best to retain word-for-word the last line of dialogue/monologue (if any) said or heard by them in the dream, since this would be requested immediately by the experimenter. Subsequently, they would be asked if any other utterances had been said or heard previous to this very last line, and, if so, to report these too, as verbatim as possible. For each utterance, they would also be asked who in the dream/mentation said it to whom. Subjects were told that, if a dream/mentation was in progress at the moment of provoked awakening but there was no verbal material to be recalled, they would first be asked to report the dream events which had occurred immediately prior to awakening.

Subsequently, the subjects would be asked to go back to the beginning of the dream/mentation (or as far back as they could) and report in as much detail as possible the entire scenario: all the events leading up to (and including) the last line(s) of dialogue/monologue—or to the last events—originally reported. (This part of the report is henceforth referred to as the *main report*.) A transcript of a specimen interrupted dream was provided, along with the transcript of the subsequent telephone interview. It was shown that the full dream report may also contain lines of dialogue/monologue additional to those immediately reported. Subjects were guaranteed total anonymity and were asked to avoid all selectivity in their reporting. It was made clear to the subjects that dream dialogue/monologue may be "good" Dutch (or good dialect, good French, etc.) or may contain language errors, and that it may furthermore be sensical or nonsensical. They were urged in all cases to be unselective and to report all utterances as word-for-word as possible. A total of 536 calls were made and taped, mostly during the last 2½ hours of the subject's stated sleeping schedule, in order to maximize the number of REM "hits."

Results of Elicitation

Of the 536 calls, 369 resulted in awakenings. Of these, 196 yielded no report; the subject was then allowed to go back to sleep immediately. The 173 dream/mentation reports obtained were from 58 of the 74 subjects. Nine reports had to be discarded due to purely technical difficulties in the functioning of the recording apparatus. The remaining 164 reports from 56 subjects (13 male, 43 female) were transcribed for analysis. The mean length of the main reports (i.e., not including the immediately elicited last lines of dialogue/monologue or last events) was eight typewritten lines, each line containing approximately 16 words. The median length was five lines. Forty-three reports clearly showed the characteristics of NREM mentation (Molinari and Foulkes, 1969) in that no additional information could be supplied on the actions leading up to the immediately elicited dialogue/monologue or actions. (For recent correlations between word counts of dream/mentation reports and the preceding REM/NREM sleep states, see Antrobus, Ehrlichman, Wiener, and Wollman, 1983.)[2] Of the full reports (i.e., immediately elicited dialogue or events plus subsequently elicited main report), 110 (67.1%) make mention of dialogue/monologue in one or more of the following ways:

1. *Direct form utterances*: These spoken lines were reported verbatim, and are transcribed in italics between double quotation marks (e.g., 'I told her "*You'd better chain your bike, otherwise it'll be gone just like that*".'). There were in toto 219 of these from 94 dream/mentation reports.
2. *Indirect form utterances*: These took the form of nominal clauses, usually introduced by nominal includers (*that, if, whether, how, what, why, when, who*, etc.), embedded in the sentences of the main dream/mentation reports. These are transcribed in italics without double quotation marks (e.g., 'So I told the children *that they were making too much noise and that they should go to bed.*'; 'The motorcyclists asked *if they could camp there.*'). There were in toto 33 of these from 25 dream/mentation reports (repetitions disregarded).
3. *Reference to dialogue/monologue*: Here, mention is made of verbal communication, but usually with little or no content specified, and, in any case, not taking the form of either a direct quote or nominal clause (e.g., 'Then we sat around gossiping.'). There were in toto 38 such references to conversation from 33 dreams (repetitions disregarded). These are excluded from the analysis which follows.

The direct form utterances are sub-divided into two categories, according to when they were reported: (a) *immediately recalled*, direct form utterances,

[2]For a content analysis along the lines of Hall and Van de Castle (1966) of these dreams elicited by telephone, see Heynick and de Jong (1985).

lines reported immediately following provoked awakening, in answer to the experimenter's first questions; (b) *non-immediately-recalled*, direct form utterances, lines not reported immediately following provoked awakening, but appearing as part of the main report, in response to the experimenter's subsequent request that the whole dream scenario be told from beginning to end. (All indirect form utterances were non-immediately-reported; this category is therefore not sub-divided.)

Of the 110 dream/mentation scenarios with dialogue/monologue, an analysis was made of 77 (from 33 subjects: 9 male, 24 female; median age 27), containing in toto 172 direct form utterances (94 immediately recalled, 78 non-immediately-recalled), and all 33 indirect form utterances (all non-immediately-recalled). The selection of dream/mentation reports for the analysis, and the inclusion of utterances within these reports, were determined as follows. Excluded were immediately recalled utterances for which no context was supplied in the subsequent main report: In reporting the whole dream scenario from the beginning, the subject may not spontaneously come all the way "back" to the end of the dream, that part in which the immediately recalled utterances were made. (Additions made by the subject in response to the experimenter's prodding are excluded from the analysis.) This also resulted in the elimination of certain whole reports—including fourteen apparently from NREM awakenings (Molinari and Foulkes, 1969)—in which immediately elicited utterances were supplied but virtually no additional information as

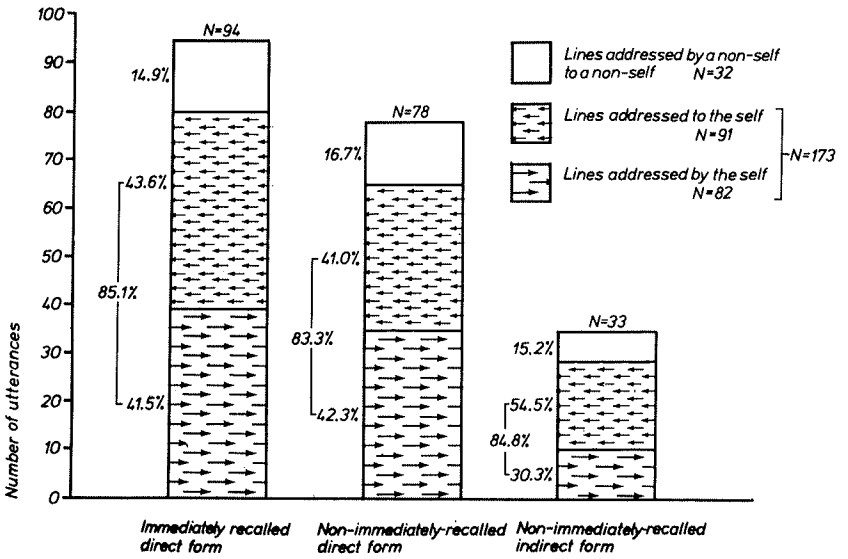

Figure 1. Addressor/addressee situation, across utterance recall types.

main report could be subsequently given, and therefore no context for the utterances. In addition, those utterances and parts of the report were excluded from the analysis which made direct reference to the experiment situation. Finally, one report had to be eliminated due to technical difficulties in the recording process which momentarily obscured important parts of the context.

Of the 205 utterances, 173 (84.4%) involved the dreamer him/herself as a conversation partner. In 82 instances (40.0% of the 205 total) the self was the addressor, addressing a non-self (except in one instance, where the self spoke "aloud" to himself). In 91 instances (44.4% of the total) the self was the addressee, addressed by a non-self. This is compatible with the give-and-take one would expect in wakeful conversation. In only 32 instances (15.6% of the total) was it a case of a non-self addressing a non-self, whereby the dreamer was a passive onlooker. The breakdown across the three categories of utterances (immediately recalled, direct form; non-immediately-recalled, direct form; non-immediately-recalled, indirect form) is given in Figure 1. This adds weight to Freud's (1915/1978e) metaphoric statement, quoted in part earlier in this article, that "dreams are completely egoistic . . . the person who plays the chief part in their scenes is always to be recognized as the dreamer" (p. 223).[3]

In preparing the transcripts for scoring, we did not feel it necessary that an immediately elicited, direct form utterance be again reported verbatim in the main report for it to be included. It was considered sufficient that the immediately recalled utterance be referred to in the main report. An immediately elicited, direct form uterance, *"It's really your own fault, you know,"* may appear in the subsequent main report as '. . . So I said to Irma that it was her own fault', or '. . . So I said to Irma that thing about its being her own fault'. The report transcript for scoring would then read '. . . So I said to Irma, *"It's really your own fault, you know"*.' The 77 scenarios which were scored had on the whole the quality of REM dreams in that, in addition to the immediately elicited, most recent lines of dialogue/monologue or most recent actions, they contained a mean of 14.2 (median: 11) typewritten lines of information in the subsequently elicited main

[3]Compare with the data from a previous experiment (Heynick, 1983a), in which the breakdown for the 580 utterances was respectively: 59.8% with the self as addressor; 28.6% with the self as addressee, addressed by a non-self; 11.6% with a non-self addressing a non-self. The lesser participation—especially active participation—of the self in the dream conversation in the present experiment as compared with this previous experiment is well above the level of significance not only for the overall totals: $\chi^2(2, N=785)=24.37$, $p<.001$, but for each of the utterance recall types as well (immediately recalled, direct form: $\chi^2(2, N=674)=11.42$, $p<.005$; non-immediately-recalled, direct form: $\chi^2(2, N=658)=8.65$, $p<.05$; non-immediately-recalled, indirect form: $\chi^2(2, N=613)=12.00$, $p<.005$. This may be partly a consequence of difference in elicitation technique. Conceivably there is a tendency when recalling and telling a full dream scenario to include more non-self participation than when recalling only a single last line of dialogue (which may tend to be selectively retrieved).

report. Only nine of the 77 main reports contained less than five full typewritten lines of information.

Methods of Scoring

Scoring was carried out by five native Dutch graduate engineering students. The scorers were "blind" to the fact that they were scoring dream reports. They were told, in broad terms, that they would be judging the efficiency of a computer-assisted program in generating utterances compatible with narrative texts, usually recounted in the first person. The scorers were asked to judge each utterance for its appropriateness to the context: i.e., the extent the lines scripted by the "computer program" were lines which one might expect to hear from normal individuals in real life. Two specimen scenarios were considered beforehand, identical in narrative context but with one containing appropriate utterances and the other containing utterances which were variously deviant. These were discussed by the students, and a general consensus on appropriateness was obtained. The scorers were cautioned against passing any judgement on the narrative context itself. It was explained that the computer-assisted program in its present state of refinement may occasionally produce unusual situations, and that the scoring should be based

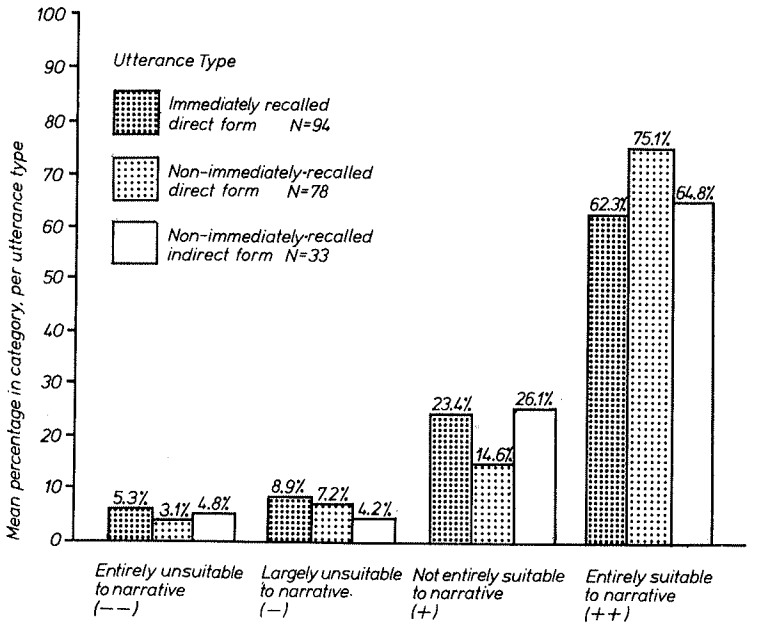

Figure 2. Ratings of appropriateness of utterances to dream context.

only on the appropriateness of the utterances to those contexts.

Each utterance was to be classed into one of four categories: (a) *entirely appropriate* (++) to the narrative; (b) *not entirely appropriate* (+) to the narrative; (c) *largely inappropriate* (−) to the narrative; (d) *entirely inappropriate* (−−) to the narrative. The students were informed that—in view of the present state of development of the computer program which they would be judging—any distribution of scores for the 205 utterances was conceivable: that there might, for example, be a rather even distribution across all categories, or that the overwhelming majority of utterances might be rated as entirely appropriate or entirely inappropriate.

Results of Analysis

The agreement between the scorers was very strong. A rank order correlation coefficient (Kendall's τ) has substantial positive values for every pair of students, and a simultaneous test for agreement between all scores yields an extremely significant χ^2 with a tail probability of 10^{-5}.[4] The overall results (see Figure 2) show a strong skewing towards the "appropriate" end of the four-category scale for all three types of utterances. Specifically: 62.3% of the immediately recalled, direct form utterances; 75.1% of the non-immediately-recalled, direct form utterances; and 64.8% of the non-immediately-recalled, indirect form utterances were deemed by the scorers to be fully appropriate (++). Only 5.3%, 3.1% and 4.8% of the respective groups of utterances were deemed to be entirely inappropriate (−−) to the narrative.

Statistical comparison of the distribution of the three types of utterances across the four categories yielded the following results. On the one hand, a significant difference failed to appear in the distribution of the combined group of 172 direct form utterances (some immediately recalled, some non-immediately-recalled) and the 33 indirect form utterances (all non-immediately-

[4]The matrix of Kendall's τ is as follows:

$\tau_{12}=0.389$
$\tau_{13}=0.349$
$\tau_{14}=0.344$
$\tau_{15}=0.380$
$\tau_{23}=0.216$
$\tau_{24}=0.296$
$\tau_{25}=0.452$
$\tau_{34}=0.331$
$\tau_{35}=0.492$
$\tau_{45}=0.354$,

showing a positive agreement between each pair of scorers, while a simultaneous test concerning all scorers together yields a highly significant result: $\chi^2(16, N=1025)=147.07$, $p<.001$ (AGREEMENTTEST procedure, Computing Center, Eindhoven University of Technology, 1982).

recalled): $\chi^2(3, N=205)=6.10$, $p>0.1$. On the other hand, a significant difference was found in the distribution of the 94 immediately recalled utterances (all direct form) versus the combined group of 111 non-immediately-recalled utterances (some direct form, some indirect form): $\chi^2(3, N=205)=11.21$, $p<.05$. A meaningful trend was discernible whereby immediately recalled utterances tended to be more often negatively scored than non-immediately-recalled utterances. The data had implications for the functioning of secondary revision, to be discussed below.

As an illustration, two dream scenarios from the same subject (female, 33 years old) are presented here, along with the scorers' ratings of the lines of dialogue/monologue. In the first report, each of the utterances received from all five scorers a perfect (0− −, 0−, 0+, 5+ +) or almost perfect rating for appropriateness to the narrative. In the second report, most of the utterances were variously rated as being less than appropriate. The first utterance in the first report is in indirect form; the rest are in direct form. Immediately recalled utterances, which were reported first upon provoked awakening and then subsequently reported again in the main report, are indicated by (*IR*). All other utterances were reported for the first time in the telling of the main report.

Report 1.

I was sitting in the garden and reading old magazines. Then my son came along. My son was about five years old; now he's already ten. And he took a little girlfriend along, also around five, and she started looking through the magazines. And they were getting wet, since she had such a cold that her nose ran. And I said *that she, your little girlfriend, should rinse her nose with the lotah (0− −, 0−, 0+, 4+ +)*, that's a jug used in yoga [instead of a handkerchief]. I use it myself, too. So I let her do it, but because she was so small, it didn't go right, and she started to cry. And then she walked home. So I said to my little boy *"I'll go to her mother and tell her what happened, otherwise she'll think 'what a strange lady'" (0− −, 0−, 0+, 5+ +)*. Then I wanted to take along a few magazines for that girl, but as I was walking in back through her alley towards her garden, I browsed through the magazine and I came across an article on making dolls, and I tore it out first. And then I thought 'now I can't give her that magazine anymore, since it looks so bad'. And then I entered the garden and everything was dark . . . . At first I didn't know what to do, then my son came again. He went out. Then that girl came out again, and my son had already told her mother that I had tried to help her get rid of her cold with the lotah. I simply knew that he had said that, but I didn't hear him say it literally. Then I said to that girl *"In the future, when you catch a cold, you should go first to the doctor and have him write out a prescription for medicine" (IR) (0− −, 0−, 0+, 5+ +)*.

Report 2.

I was at a party, it was my mother's party, in any case, and the house had been entirely cleared out and there were lots of chairs and desks like I had had in elementary school— of that light birchwood with steel. And there I was, sitting next to an uncle of mine, and he began a chat, and at a certain point he asked *"And are you still working?" (IR) (0− −, 0−, 0+, 5+ +)*. And I said *"Yes, I attend a school which rounds everything off" (IR) (0− −, 1−, 3+, 1+ +)* . . . . Everyone at the party had lightly colored clothes on, white and yellow, soft, gay colors . . . . I was suddenly walking in a park . . . . There was a bench to the right of the path where I was walking, and three girls, about 14 years old,

were sitting there. They were calling out and laughing, and then I noticed that one of my shoes wasn't on right. The strap was around my ankle, but I was walking on the heel of the shoe; it was folded over a bit. And the girls called out *"That lady is walking on her shoe" (IR) (0− −, 0−, 4+, 1+ +)*. And then I had to laugh myself. To the right it was a bit higher, a sort of ball. I put my foot up on it and undid my shoe, and put it on again. And meanwhile I said to my foot or shoe, *"Walk away, my little shoe, sweep the ash from my feet" (IR) (2− −, 2−, 1+, 0+ +)* [The first two words of this utterance are in English in the original].

It should be noted that virtually all direct form utterances, whether immediately recalled or non-immediately-recalled, were as fully grammatical as those of the above two reports, a factor which could only contribute to their acceptibility. This syntactic well-formedness is very much in keeping with that obtained in the previous experiment (Heynick, in press).[5] Furthermore, the fact that the direct form utterances were not scored as significantly more appropriate to the narrative somewhat argues against the importance of secondary revision, since it might be assumed that indirect form utterances are potentially susceptible to greater elaboration, due to their not being reported "verbatim". On the other hand, however, it should be noted that secondary revision is never entirely discountable. The significant tendency to score immediately recalled utterances as a group more often negatively than non-immediately-recalled utterances gives some indication that appropriateness may be a function of the amount of time in which elaboration is allowed to take place, and that at least some secondary revision (or "tertiary revision" [Breznitz, 1971]) is distinct from the dream(work) proper.

Our results align themselves with the specimens in the various dream interpretation books (as opposed to the specimens provided in studies by historical authors, especially Kraepelin, and to the specimens of overt sleep-talking supplied by Arkin). This is so despite the systematization and immediacy which separates our elicitation technique from those which yielded the specimens in dream interpretation books, and also despite our checks on the functioning of secondary revision. Our results therefore also accord

[5]In fact, of the 211 direct form Dutch utterances, immediately recalled and non-immediately-recalled (including those which were not rated in the preceding analysis), a meager six (2.8%) showed apparent syntactic or morphological irregularities. Three of these were immediately recalled utterances, and the other three were non-immediately-recalled. Dialect appears specifically in three (1.4%) of these 211 Dutch direct form utterances. Another eight specimens, representing 3.7% of the grand total of 219 direct form utterances, involve a foreign language. This accords almost exactly with the 3.6% found in a previous experiment (Heynick, 1983a). Five of these eight specimens involve English, while three were in French (of which one involved reading a letter "aloud" in the dream; see Heynick, 1984). One of the "English" specimens involved intrusion into an otherwise Dutch utterance (the last specimen in dream report 2, above). The frequency accords closely with the previous experiment, in which two out of 580 specimens were an improper mixing of a foreign language with Dutch. Interestingly, of the four other English specimens, three involved remote communication, with the utterance transmitted by phone, loudspeaker, and radio (in the latter case involving a line from a song).

with the greatest of all dream interpretation books, the *Traumdeutung*, at least as far as characteristics of the specimens are concerned. This is definitely less so regarding Freud's replay hypothesis as to the specimens' genesis. What conclusions can now be drawn concerning dreaming, on the issues of dissociation of faculties, intrapersonal versus interpersonal communication, the interaction of primary and secondary processes, and the relation of superordinate and subordinate cognitive systems?

Discussion

Granting the largely attention-independent nature of sentence construction in general (Heynick, in press), an important issue concerns whether the selfsame autonomy of grammatical proficiency which permits the production of syntactically acceptable dialogue in dreams may not also result in an apparent lack of pragmatic competence: a divorcing of the dialogue from the context of the scenario (first review section). Obviously, there is psychic dissociation in dreaming in the sense that West (1967) described, in that stored information which is hallucinatorily activated is treated by the dreamer as incoming information. But it would also appear that the pseudo-outgoing information, which takes the form of hallucinated speech, is well integrated into, and in conformity with, the hallucinated scenario. Furthermore, one should be cautioned against overemphasizing the "stored" quality of the information in dreams which is hallucinated as incoming. The utterances which are perceived as spoken to the dreamer show strong indication of being novel, rather than "replayed," just like those spoken by the dreamer. In terms of Hilgard's neodissociationist theory, it would seem that the executive ego in the dream continues to be aware of the self and to conceive of the self as an actor in the dream scenario. We note in this regard the overall figures provided in the previous section: the strong participation of the self as addressor (40.0%) or addressee (44.4%) in dream conversation, as opposed to onlooker (15.6%). Whatever changes may take place during the shifting in the hierarchical arrangements from wakefulness to sleep, it appears that the language capacity remains largely subordinate as far as hallucinated dream speech is concerned, and (in contrast to what often seems to be occurring in the case of overt sleeptalking) does not acquire a semiautonomous status. What Arkin calls the "sleep executive ego" (as opposed to the wakeful executive ego) retains a large degree of control over the cognitive system of spoken language, at least during dreaming. In neurophysiological terms, it would appear that the disruption in the normal (wakeful) cerebral processes which is cited by Arkin to explain the anomaly of overt sleeptalking need generally not be invoked in the case of hallucinated (covert) dream speech. Dream dialogue seems far removed from the nonpropositional, automatic,

overlearned phrases which Jackson (1874) allows that the "right" hemisphere may produce when released from domination by the "left" hemisphere. Not only does dream speech display the grammatical well-formedness and complexity usually credited to the left hemisphere, there is furthermore little to suggest a strong loosening of integration between the two hemispheres, since (again in contrast to many a case of overt sleeptalking) dream dialogue, apparently generated by the left hemisphere, seems closely related to the visual scenario presumed to be generated by the right hemisphere.

As far as Flavell and Draguns' (1957) concept of microgenesis is concerned, there seem to be only sporadic examples in recalled dream speech which would represent earlier ("premature") stages in the normal thought generation process. One cannot, of course, totally disregard the possible influence of secondary revision (see Heynick, 1981a). The final stage in the generation of recalled dream speech (as opposed to the generation of hallucinated dream speech) is the overtly articulated (if not written) reporting itself after awakening, just as the final stage in the generation of speech in waking life is overt articulation.[6] The aborting of primary process components which, according to the microgenesis concept, takes place (automatically and unconsciously) in the latter case may no doubt be occurring in the former case as well, despite all conscious efforts to avoid it. It remains, nevertheless, very noteworthy that our looking through the potential "window" onto a supposedly earlier stage in the normal speech generation process—a unique opportunity provided by the recalling of hallucinated dream speech—should yield specimens which are generally well-formed and appropriate by wakeful standards. All this does not in itself necessarily argue against the validity of the microgenesis concept of thought production (in sleeping or in wakefulness), but does indicate that even the "original" dream speech may represent a stage in the speech

[6]The immediate recall (articulated reporting) of hallucinated dream speech can involve hesitations of various lengths and in various positions in the sentence. Some examples which lend themselves to translation (each hesitation dot represents approximately a half-second) are:

"*In that case . . . they may be relatives, since . there's a branch . of the Rodenburgh family living in Breda.*"

"*No, I don't want any . beer.*"

"*I don't understand why you have to laugh like that; you should see . what that guy did.*"

As Cipolli and Salzarulo (1975) state with reference to the overall dream report (but which would also apply to the relating of dialogue within the scenario): "The verbal report contains cues as to the difficulty of the search and retrieval process; such indices as pauses, interruptions in syntactic structure, and repetitions, should indicate interferences in the verbal expression of the discontinuity of content" (p. 320). Although the position and duration of such pauses have been studied in (wakeful) Dutch and English speech for indications of the nature of the sentence production process, I am aware of no psycholinguistic data on hesitations typical of utterances which are repeated verbatim. If such data were forthcoming, and if the position and duration of such breaks were to contrast with those of nonrepeated speech, then such measures might lend themselves to indicating whether reporting of hallucinated dream speech indeed involves verbatim recall, or, rather, (partly) new production.

generation process which is more advanced than has hitherto been generally acknowledged.

Our results can only lend support to Gill's contention that Freud's excluding of all "intellectual achievement" from the dreamwork proper represents too strong a formulation—and certainly insofar as the scriptwriting (a combination of grammatical proficiency plus pragmatic competence) is considered to be a product of the intellect. The inhibition which according to Freud is exercised in wakefulness by the secondary process upon the primary process is only partially relaxed during dreaming, and in fact, as far as language is concerned, even less relaxed than Gill himself seems to recognize. Indeed, in dream speech one seems by no means to be viewing the product of fundamentally primary processes, but rather of secondary processes which may have relaxed some of their inhibitions and therefore compromised themselves with the inhibited forces thus released.

Alternatively, one may argue along the lines of Holt that Freud's more extreme comments likening the id to a "chaos" and "seething cauldron" are indeed overly bold metaphors, a hypothetical limit, and that the unconscious retains a high degree of structure. But if one takes the dreamwork to be by definition a manifestation of processes of the unconscious, then inevitably one is forced to recognize a higher level of structural development in the id (as indicated by dream speech) than would seem reasonably tenable. In the absence of any significant evidence in favor of Freud's replay hypothesis for the generation of dream speech, one is better off viewing the dreamwork as representing retrogression in the developmental process, and a relatively modest retrogression at that. While the hypothetical id may have its own ancient "language," "grammar," and "vocabulary," these are unlikely to be the linguistic tools capable of generating complex, propositional lines of dialogue which are furthermore largely appropriate to their situational contexts.

Regarding Noy's (1969, 1979) original subdivision of the primary processes across four categories: his second subdivision, which allows that the process itself may be unconscious, but the product conscious as in the case of "a strange word or sentence [in a dream, which is] a condensation . . . of several familiar words" seems like an accurate phenomenological description. But unless one limits oneself to a highly selective Kraepelin-like corpus, it needs to be recognized that the product thus described is far from typical of dream speech. If one wishes to maintain, as Noy does, that normal speech is indeed a secondary process, being dependent upon feedback for its ontogenetic development, then one must recognize that speech in dreams is largely the product of a secondary process, with only some disturbances apparently due to primary process contamination. Furthermore, instances of Noy's third subdivision (the process and its product are conscious, but the former only ex post facto), as exemplified by "Freudian slips" in wakefulness, are not totally unknown

in dreaming. Specimens of self-correction in dreams are found in Freud's own writings, as well as in more recent literature and in our own experiment corpora.

This idea has implications as well for Noy's (1979) more recent article with its self-centered versus reality-oriented distinction between the primary and secondary processes, respectively. The dialogue of dreams would seem to be largely exempt from undergoing secondary revision (by Noy's extended definition of this term) in the process of reporting since, in principle at least, no "verbalization" in the sense of switching of medium is required. Yet the dialogue, as reported, shows few characteristics which might be associated with self-centered autistic speech, since it adheres to the communal syntax of reality-oriented wakefulness and usually shows an appropriateness to context one would expect of objective interpersonal communication. Furthermore, Noy's placing of Freud's replay hypothesis in an extended context (allowing novel recombination of previously experienced elements) has only marginal explicatory value here. Conceivably, all elements of dreams, whether pictorial or verbal, derive from personal experience. But in the latter case, at least, there is no compelling evidence of "replays" on the sentential or phrase level. To state then that, on the lexical level, the words which make up dream speech are words said or heard previously in wakefulness would, of course, reduce the replay hypothesis to extreme triviality, since the same could be said of daily speech. Even if one were to propose a virtually unverifiable hypothesis that key individual words in dream utterances are more likely to stem from personal experiences of particular emotional importance, the problem would still have to be addressed of how during the dreaming process these words could be recombined into utterances which conform both syntactically and pragmatically to the rules of reality oriented, interpersonal communication.

In light of the experiment data, Foulkes' (1982) psychoneirics model, which, drawing for support upon the work of Cipolli and Salzarulo (1975), treats REM dream generation as a skillful cognitive act bearing parallels to the psycholinguistics of speech production, compares favorably to aspects of Freud's (1900/1978a) concept of primary-process dreamwork. On the crude anatomical level, Foulkes maintains that "although there may be relative changes in left versus right hemispheric activation during REM sleep as compared with wakefulness, these are, at best, relative changes *rather than signs of verbal disengagement* [italics added]" (p. 183). In psychological terms, Foulkes proposes that although "there are major differences between speech and dream production at both input and output levels . . . the midrange stages of speech and dream production may be largely identical" (1982, p. 169). Foulkes' emphasis is on the "lawfulness" of dream generation, which he sees as inviting comparison to the normal rule-governed production of speech. By this he does not mean to deny that in many, if not most dreams, perceptions are

anomalous compared to wakeful perceptions. Rather, Foulkes maintains that the anomalies, while atypical, are "lawfully atypical" in that they obey certain constraints in combining, just as phonological, morphological, and lexical slips of the tongue (in wakefulness or whenever) are constrained by the permissible combinations of the given language (see Heynick, in press).

Foulkes invokes, somewhat incidentally, the concept of *spreading activation* (Heynick, in press), thereby implying that the generation of even the most "grammatical" of dreams is no less automatic, and therefore no more of an intellectual operation than is speech production. On the other hand, Foulkes' tendency to assign a high degree of syntactic well-formedness to the output of the dream generation process proper would contrast with Freud's model, in which the dream is, first, the output of primary process dreamwork, with coherence imposed to a greater or lesser extent only subsequently by secondary revision. In this respect, Foulkes' model would also stand in opposition to the activation-synthesis model of Hobson and McCarley (1977; see also Heynick, 1985). (These two models do however agree that there need not be any "meaningfulness" in the initial input to the dream generation process. As such, they both contrast with Freud's model—which, of course, assumes that there are latent dream thoughts which are recoverable—and with psycholinguistic models of speech production, which map underlying thoughts or intentions onto sentences.)

As potential support for the grammaticality of dreams, Foulkes, unlike in his previous work (Foulkes, 1978), explicitly points to the "practically universal" appearance within the overall dream scenario of hallucinated conversation, which can also be "quite complex." As shown in a separate experiment (Heynick, 1983a, in press), recalled dream dialogue does indeed display a complexity comparable to that of wakeful speech, and a high degree of syntactic well-formedness. Yet, the results of that experiment (as we have interpreted them, within the framework of speech production which is largely automatic), need not in and of themselves be taken as supporting Foulkes' speculation that dreaming is a skillful cognitive act—although they by no means run counter to it, which *would* have been the case if our corpus had been characterized by severely deviant aphasic-like utterances of the type often presented by Kraepelin (1906). The results of the experiment reported in the present article, however, not only confirm the general syntactic well-formedness and broad range of complexity of reported dream speech, they also, as we have seen in the previous section, indicate a high degree of appropriateness of these lines of dialogue to the overall dream scenario. On the grounds of parsimony, these results cannot but favor Foulkes' model above not only Hobson and McCarley's (1977), but Freud's model as well.

Yet, a point in Foulkes' criticism of Freud deserves critical comment in turn. In support of the claim that dream output, when atypical, is as lawfully atypical

as everyday speech errors, Foulkes points to the "permissible" nature of the composite facial image in one of Freud's own dreams (Irma's injection), which he apparently sees as deprived of any "Freudian" significance, in that it is merely the consequence of spreading activation operating within the freedom and constraints of the dream generation process. However, Freud himself (1901/1978c) does not imply that the slips of the tongue he presents violate the phonological and morphological rules of German. As Motley (1980) points out, this conformity allows a purely "linguistic" interpretation, but does not in and of itself exclude a Freudian one.

Especially noteworthy are apparent instances of word blends (Ellis 1980; see Heynick, in press). These characterized a modest 4 (1.8%) of all 219 direct form utterances (including those which were not scored in the analysis above), and these were all immediately recalled. One utterance involved a single compound word, "*Surf-wound-powers* [Brandingwondkrachten]", which the subject had in mind upon awakening from a reverie over a beach; another instance involved a kryptogram and a non-existent word: "*Hey, it comes out 'senerarisol'* [idem]"; a third instance likewise involved recreation: "*Yes, you've got keent* [idem]," said in the dream by a cardplayer to another cardplayer in explaining an unusual game; the fourth specimen, "*Did you know the pin-area* [speldengebied] or *pin-mountains* [speldengebergte]?," was said to the subject by a classmate, in reference to homework. In none of the above instances was it clear to the subjects what was meant. Whether the errors were indeed Freudian in the psychodynamic, deterministic sense is, of course, unverifiable, but it is noteworthy that the respective subjects were quite ready to speculate on the latent meanings of the word blends, along lines similar to Freud's analysis of his "*Auf (Un)geseres*" and "*Here comes the breakfastship*" dream utterances presented above, or his famous one-word "*Autodidasker*" dream (probably hypnagogic). This brings to mind a widely recognized principle that dreams, whatever their "real" genesis, are especially suited for use in therapy, since, in Eisenstein's (1980) words, "patients will more readily recognize the dream as 'their own' creation, rather than accept [wakeful] slips of the tongue or acting out as products of their unconscious and regressed mental life" (p. 327; cf. also Noy's classification, above).

All eleven (5.4%) of the 205 scored utterances the ratings of which fell predominantly on the "inappropriate" side of the scale would also seem ripe for such analysis. This applies to the half-English/half-Dutch utterance which the dreamer addressed to her shoe in report 2, above. Or consider the following excerpt:

> . . . And then a black carriage came by and a man was sitting in it with black clothes on. . . . And we began to ride, and then I got terribly ill and had to vomit. And then it appeared that I had swallowed a little bird. And then the man sang [!]"*You ate the household garbage up, and left the tasty things over* [Je hebt het huisvuil opgegeten, en het lekkers laten staan]".

The last line was recognizable to the awakened subject as a distortion of the well known Dutch children's song in which a parrot says "I ate my food up, and left my drink over" ("Ik heb mijn eten opgegeten, en mijn drinken laten staan"). This variation on the theme seems to have been composed in the dream itself, and to little apparent purpose. (For a discussion on artistic verbal creativity in sleep, see Heynick, in press.)

An excerpt from another dream may also be illustrative:

> . . . And then I'm with some people . . . in a café or bar. And, yeah, I was doing some looking around and I was surprised by the fact that so many people made contact so quickly with one another. And, yeah, someone said with regard to this [!]"*It's just as if they were walking around with their headlights on*".

Whether dreams do or do not have any "meaning" of the type attributed to them by dream interpretation books (beginning with what Dement, 1974, refers to as the "grand-daddy of them all", the *Traumdeutung*) remains an open question, which it was not the purpose of the present paper to resolve definitively. However, the data presented in the preceding sections strongly indicated that, in any event, meaning does not come from a massive infusion of primary process interference into otherwise secondary process functioning—at least not as far as dream dialogue, as recalled, is concerned.

It should on the other hand be obvious from both our literature survey and experiment data that whatever meaning may be ascribed to dreams, by whatever school, would be largely lost if the scenarios were deprived of their dialogue, just as (to return to the cinematographic metaphor with which we began) a sound film would loose much significance without its soundtrack. As Marshall (1974) in his study on Freud's psychology of language concludes, Freud as a psychopathologist was concerned with the "consequences of our being talking animals" (p. 363). One of the consequences, well recognized by Freud himself, and now verified and re-verified, is that speech plays a part in the everynight life of *homo loquens* comparable to the everyday life.

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