

THE PRIMAL CAVITY

A Contribution to the Genesis of Perception and Its Role for Psychoanalytic Theory

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In recent years two forms of psychoanalytic approach to the phenomenon of sleep have claimed our interest. I am referring to Lewin's (1946) interpretative and reconstructive work on the dream screen, on one hand, and to Isakower's (1938) clinical observations on the psychopathology of going to sleep, on the other. It is my belief that these two studies cover two aspects, and, beyond this, two stages of a regressive phenomenon, which has its counterpart in ontogenetic development. The regressive phenomena described by Lewin and by Isakower fall into the area of "normal" psychological functioning. The developmental data which I shall present in what follows, will serve to retrace the same process in the opposite, in the progressive direction. I hope to show that the dream screen hypothesis of Lewin and the clinical observation of Isakower have their parallel in the independent findings of direct infant observation and in the neurophysiology of perception. The convergence of the three lines of research, Isakower's, Lewin's, and my own, is noteworthy. Each started from a different point and, using different approaches, yields findings which are mutually explanatory. I have first spoken of such convergences in a communication on "Experimental Design" (1950b) and stated that in psychoanalysis such a convergence can occupy the place which validation has in experimental psychology.

THE DREAM SCREEN AND THE ISAKOWER PHENOMENON

Lewin's hypothesis takes as its starting point Freud's statement that the dream is the guardian of sleep. The fundamental wish-fulfilling nature of the dream ensures the continuation of sleep. In this function the dream is the manifestation of a regression to the emotional state of the infant when it goes to sleep at the mother's breast after having drunk

his fill. Certain of his patients' dreams appeared as if projected onto a screen which, Lewin holds, is the visual memory of the breast. He further assumes that this dream-screen-breast is always present in dreaming; that in the "blank dream" it actually is the dream content. He connects these findings with his other proposition, that of the oral triad of the wish to eat, to be eaten, to sleep (to die).

Isakower's contribution is the clinical observation that some of his patients, when in the reclining position, particularly when subject to elevation of temperature, or in the predormescent state, have certain sensations which partake of the mouth, of the skin surface and of the hand sensitivity. The somewhat vague sensations are of something wrinkled, or perhaps gritty and dry, soft, filling the mouth, being felt at the same time on the skin surface of the body and being manipulated with the fingers. Visually the sensation is perceived as shadowy, indefinite, mostly round, approaching and growing enormous and then shrinking to practically nothing.

Lewin's and Isakower's observations have proved extraordinarily fertile both clinically and theoretically. The clinical observations of numerous analysts, including myself, have confirmed their findings.

When, however, I confronted Lewin's hypothesis with the findings of my own research on perceptive development, a difficulty arose. Lewin's description of the dream screen has a perceptive aspect and an affect aspect. We will begin with the discussion of the perceptive aspect, for since Freud's earliest writings perception has been rarely explored by psychoanalysts.

THE BEGINNINGS OF PERCEPTION

Both Lewin and Isakower state that the phenomena described by them are based on the memory of what they consider to be the first visual percept, namely, the mother's breast. My own work on the earliest stages of perception, conducted by the method of direct observation on infants, led me to experimental findings which at first appear to contradict their conclusion. In agreement with the statements of the academic psychologists Volkelt (1929), Hetzer and Ripin (1930), Rubinow and Frankl (1934), and Kaila (1932), I came to the conclusion that the first visual percept is the human face; to be more exact, it is a Gestalt configuration *within* the human face.

This first visual percept cannot be achieved at birth. It is progressively developed in the course of the first three months and is reliably perceived, and reacted to as such, in the course of the third month of life. I have

elaborated these findings in my experimental study "The Smiling Response" (1946, 1948), in which I have also shown experimentally that at this period no other visual percept is recognized or reacted to in the same reliable manner as the human face.

This is a decisive turning point in the development of the psyche during the first year of life. It is the turning from passive reception to active perception, and accordingly I have called it, in analogy to an embryological concept, an "organizer" of psychological development. We will come back later to some of the details of this phenomenon.

The period prior to the crystallization of this first visual percept has been described by Hartmann (1939) and Anna Freud (1952) as the period of *undifferentiation*, by myself as that of *nondifferentiation*. The term *nondifferentiation* should be understood in a global, total sense: on one hand, the infant does not distinguish what is "I" from what is "non-I," the self from the non-self, let alone the constituent elements of his environment. On the other hand, his own faculties, be they modalities of feeling, of sensation, of emotion, are not differentiated from one another; finally, no differentiation within the psychic system or even between the psyche and soma can be demonstrated. A case in point is the phenomenon of the so-called "overflow" in the newborn.

The subsequent differentiation is a progressive one, maturational on one hand, developmental on the other. It is in the course of the first three months, more or less beginning after the sixth week, that we can detect experimentally certain areas in which the infant begins to distinguish visual percepts. The first such percept to which it reacts is the human face. Toward the middle of the second month of life, the infant begins to follow the movement and displacement of the human face. Later, after about ten weeks, he responds to the human face with a differentiated manifestation of emotion, that of smiling.

With these observational facts in mind, let us now imagine the perceptual world of the infant before differentiation has begun; to achieve this, it is well to project ourselves backward to the memories of our own childhood and to realize how gigantic every remembered street, house, garden, piece of furniture appears in our memory; and how, if we happen to see it again twenty years later, it seems, surprisingly, to have shrunk.

This shrinkage of remembered impressions is due to the increase of our own size, for man is the measure of all things. Considering that the infant's face is one third the size of the adult's face, and that the infant's whole length at birth is little more than one quarter that of the adult, one begins to realize how gigantic the adult appears to the infant.

Swift illustrates this in *Gulliver's Travels*, a point mentioned by

Freud (1900, p. 30); Lewin (1953a) refers again and again to this distortion of the infant's perception. The distortion is even more accentuated through the fact that the perceptive angle of the infant's vision, when approached by an adult, has to be an extremely wide one—we do not usually see people as close as the infant sees them. Lewin did not overlook this; he speaks of the "diplopic, amblyopic baby, with its weak powers of accommodation and its confused depth and color perceptions (1953a, p. 183). (See also Margolin, 1953.)

We can assume that the baby, if indeed it perceives anything, perceives moving, shifting, gigantic, vaguely colored and even more vaguely contoured inchoate masses. In the midst of this chaos certain of these shifting masses reappear periodically and are associated with certain recurrent sensations, feelings, emotions. They become associated, in short, with need satisfaction.

It is at this point that my observations on infants appear to contradict both Lewin's and Isakower's assumptions. The reason for this divergence is a twofold one; one has already been mentioned: namely, that the first percept to be crystallized out of the shifting nebular masses in the world of the baby is the human face. The second is an easily demonstrable fact which can be checked by anyone who takes the trouble to observe a nursing baby. The nursing baby does not look at the *breast*. He does not look at the breast when the mother is approaching him, nor when she is offering him the breast, nor when he is nursing. He stares unwaveringly, from the beginning of the feeding to the end of it, at the mother's face.

Therefore, I offer the proposition that the Isakower phenomenon does not represent the approaching breast—at least not from the visual point of view. In my opinion it represents the visually perceived human face. All the phenomena, all the details described in Isakower's and Lewin's examples, as well as in those provided by other analysts, are to be found in the human face. The cracks, the wrinkles, the roses, the spots—but let Gulliver in Brobdingnag speak: "Their skins appeared so coarse and uneven, so variously colored when I saw them near, with a mole here and there as broad as a trencher, and hairs hanging from it thicker than pack threads, to say nothing further concerning the rest of their persons" (Swift).

It would seem that the facts of perceptive development cannot be reconciled with either Isakower's or Lewin's assumptions. Such is not my opinion; on the contrary, I believe that my findings, and the observable data of perceptive development, actually form the bridge between the Isakower phenomenon and the Lewin propositions, and round them off

in certain aspects. The real point of juncture is to be found in the observation that the infant, while nursing at the breast, is at the same time staring at the mother's face; thus breast and face are experienced as one and indivisible.

It should be remembered that at birth the newborn perceives only sensations originating *within* his body. He is protected from outside perceptions by the stimulus barrier. How, then, does the turning from inner stimuli to outer perception, be it even of the inchoate kind described earlier, come about? It seems to me that the present state of our knowledge permits the following proposition:

We possess one localized perceptual zone which includes in itself both the characteristics of interior and exterior perception. From birth on and even before (Minkowski, 1925, 1928; Davenport Hooker, 1942, 1943), a readiness for response to stimulation can be demonstrated in and around the mouth. This behavior is of an aim-directed nature. We may, with Konrad Lorenz (1950), call the readiness underlying this response an *innate releasing mechanism*, an IRM. Like all IRM's, it has survival value.¹ The resulting behavior consists in the following: The whole outside part of the mouth region, of the "snout" (nose, cheeks, chin and lips), responds to stimulation by a turning of the head toward the stimulus, combined with a snapping movement of the mouth. The function of this response is to take the nipple into the mouth.

We call this behavior the sucking reflex. Though it can be elicited by appropriate stimulation in the fetus and even in the embryo, at birth it is unreliable like all innate behavior in man. In reflexological terms, it is neither stimulus-specific nor response-specific; that means that it does not *always* take place in response to the stimulation of the snout, nor does it *only* take place in response to the stimulation of the snout.

But despite this comparative unreliability it is one of the most reliable responses at birth. Its reliability is second only to that of the clutch reflex, which is the closing of the hand on palmar stimulation; in the same order of reliability as the clutch reflex is its antagonist, described by me under the name of the *digital stretch reflex* (1950a) which consists

¹ IRM (innate releasing mechanism) is a concept introduced by animal ethologists (Uexküll, Lorenz). The concept has hardly ever been defined in the literature, except in terms of the releasing stimulus. An exception to this is an attempt made by Tinbergen (1950, p. 309). The approximate definition given by Tinbergen elsewhere (1951) will suffice: "There must be a special neurosensory mechanism that releases the reaction and is responsible for this selective susceptibility to a very special combination of sign stimuli. This mechanism we will call the Innate Releasing Mechanism (IRM)" (p. 42). We may complete it by a definition given by Baerends (1950): "The mechanism beginning at the sense organs, ending at the center released and including the sensitivity for characteristics of the object, we will call the releasing mechanism" (p. 338).

in the stretching of the fingers on dorsal stimulation of the phalanges. It is noteworthy that sucking and clutching—the two archaic responses which show directed behavior and which are far and away more reliable than all others at this period—are to be found in connection with the hand and the mouth; and, moreover, that they are both directed to an action of “taking into,” as it were. It is surely significant that the regression in the Isakower phenomenon concerns the selfsame organs, the hand and the mouth.

One may speculate on the question whether the unreliability of these responses may have its cause in the fact that they are provoked by stimuli originating on the outside of the body, so that they impinge on the sensorium, which at this stage is not yet cathected. But, as we have stressed before, reception of inner stimuli is already present at this stage. Accordingly, we have next considered a stimulation which involves simultaneously both the outside and the inside. Such a stimulation takes place when the nipple is placed *inside* the newborn's mouth. In view of what we have said above, it is not surprising that this stimulation elicits a much more reliable response at this period; the response consists in sucking and in the concomitant process of deglutition.

What appears to me significant in this phenomenon is that the *inside* of the mouth, the *oral cavity*, fulfills the conditions of partaking for perceptive purposes both of the inside and of the outside. It is simultaneously an interoceptor and exteroceptor. It is here that all perception will begin; in this role the oral cavity fulfills the function of a bridge from internal reception to external perception.

Both Isakower and Lewin have included some of these ideas into their reconstructive approach to the problem. Isakower has assumed that the combination of the oral cavity with the hand corresponds to the model of what he defines as the earliest postnatal ego structure, and that the sensations of the oral cavity are probably unified with those of the external cutaneous covering.

Lewin (1953a) in his “Reconsideration of the Dream Screen,” quotes Dr. Rogawsky to the effect “that the original cavity might well be the inside of the mouth, as discovered and perceived by the suckling's finger. Accordingly, the earliest impression of the mouth would serve as a prototype of all later ideas of body cavities.”

I would agree with this formulation, but would make it more specific. It is misleading, in my opinion, to speak of the suckling's finger discovering or perceiving anything. At this early stage (the first weeks of life) the organ in which precursors of perceptions are received is the oral cavity and not the finger. We have, therefore, to consider rather what the oral

cavity perceives when something—in the case suggested by Dr. Rogawsky, the finger—is introduced into it. Even earlier than this, the nipple, and the jet of milk coming from it, have acted as the earliest postnatal liberators from thirst. How enduring the memory of the unpleasure of thirst is can be seen from the repetitive mentioning of the gritty, sandy sensation in Isakower's examples.

To me this finding is not surprising. I have stressed again and again in the last twenty years that speaking of hunger in the newborn and infant is a misnomer. The sufferings of hunger are not comparable to thirst, nor do they occur in response to as brief a deprivation as those of thirst. We are all too prone to forget that at birth the infant shifts from the life of a water dweller to that of a land animal. During the intrauterine period his mouth cavity, larynx, etc., were constantly bathed in the amniotic liquid. After delivery a continuous stream of air will dry out the mucosa with great rapidity, particularly since the salivary glands begin to function only many weeks later. This drying out of the mucosa will cause all the discomfort sensations of a dry mouth, throat, nasal passages, etc., connected with thirst; and not with hunger. Thirst, or rather dryness of this area, will therefore be one of the first experiences of discomfort in the infant.

But the experience of relief from unpleasure through the nipple which fills the newborn's mouth (remember the disparity of sizes!), and the milk streaming from it, is only one part of the picture, a passive experience. The act of sucking and of deglutition is the infant's first active co-ordinated muscular action. The organs involved are the tongue, the lips and the cheeks. Accordingly, these are also the muscles which are the first ones to be brought under control, a fact which makes the later smiling response possible.

Similarly these will be the first surfaces used in tactile perception and exploration. They are particularly well suited for this purpose because in this single organ, the mouth cavity, are assembled the representatives of several of the senses in one and the same area. These senses are the sense of touch, of taste, of temperature, of smell, of pain, but also the deep sensibility involved in the act of deglutition. Indeed, the oral cavity lends itself as no other region of the body to bridge the gap between inner and outer perception.

True, the quality of this perception is a contact perception, not a distance perception like the visual one. Hence, a further transition has to occur from tactile to visual perception.

I have already mentioned one factor in this transition: the fact that the nursing infant stares unwaveringly at the mother's face as soon as his

eyes are open. We have to add to this a second factor, namely, the maturational and developmental level of the infant's sensory equipment, including the central nervous system on one hand, the psychological development on the other, during the first weeks and months of life, previously characterized as the stage of nondifferentiation. Stimulation occurring in one system of the body is responded to in others. Overflow is the rule of the hour. We may again advance a hypothesis: when the infant nurses and has sensations in the oral cavity while staring at the mother's face, he unites the tactile and the visual perceptions, the perceptions of the total situation, into one undifferentiated unity, a situation Gestalt, in which any one part of the experience comes to stand for the total experience.

THE MODALITY OF PRIMAL PERCEPTION AND ITS THREE SUBSIDIARY ORGANS

It has become evident in the course of this discussion that this first experience of the baby is not a simple one. We had to expand our approach to the genesis of perception by including in it emotional qualities, those of pleasure and unpleasure, as well as dynamic qualities, namely activity and passivity. That, however, is inevitable in all developmental research, as I have shown elsewhere (1946, p. 65), because affects are the initiators of all perception, emotional development its trailbreaker, indeed the trailbreaker of development in all sectors, hence also dynamic development.

Obviously the source of these affects of the infant is a physiological one, a need. As Freud (1915b) stated, the drives originate at the dividing line between the soma and the psyche. It is the need which produces the tension that is expressed by the affective manifestations of unpleasure. It is the need gratification which leads to tension reduction and quiescence. This dynamic process activates the first intraoral perceptions, which take place on a dividing line again, that between inside and outside.

The site of the origin of perception and of psychological experience has far-reaching consequences. For it is here that the task of distinguishing between inside and outside has its inception; this discrimination becomes established much later and will lead in an unbroken development to the separation of the self from the non-self, of the self from the objects, and in the course of this road to what is accepted and what is rejected (Freud, 1925). I might mention in passing that the time necessarily elapsing between the arising of the need and the reduction of tension introduces a further element into our picture, that of the capacity to

wait, the capacity to tolerate tension or, in a term recently become fashionable, that of frustration tolerance.

The particular anatomical location and physiological function of the oral cavity enables it to distinguish the outside from the inside. This leads us to a qualification of a generally accepted psychoanalytic proposition stressed by both Isakower and Lewin. It is correct that the breast is the first object; it is probable that the breast, or rather the nipple, forms a part of the first percept; but direct observation proves that the breast definitely is not the first *visual* percept.² This is because at this earliest stage of life *distance* perception is not operative, but only *contact* perception. It is of special interest to our discussion to examine what organs besides the oral cavity are involved in the contact perceptions of the nursing situation. Three such organs are in evidence from birth.

1. Of the three, the most evident is the hand. Its participation in the nursing act is obvious to every observer. At birth this participation is in the nature of overflow; the sensorium of the hand is not cathected as yet, as shown by Halverson's experiments (1937). He found that the clutch reflex on palmar stimulation is reliably elicited when tendons in the palm are stimulated—a stimulation of deep sensibility—and was unreliable on cutaneous stimulation. The activity of the hands during nursing, when both hands find their support on the breast, consists in a continuous movement of the fingers which clutch, stroke, claw and scratch on the breast. This activity will accompany the nursing process consistently during the subsequent months. It will become more and more organized, probably as a function of the progressive cathexis of the hand's sensorium. We can imagine the development as beginning with an activity of the mouth, overflowing into the hand; at a somewhat later stage this is proprioceptively perceived and, when the sensorium is cathected, also exteroceptively. This early co-ordination of mouth and hand function and its progressive development is in agreement with the embryological and neurobiological finding that maturation proceeds in a cephalocaudal direction.³

² Percept, the thing perceived (Hinsie and Shatzky), should be clearly distinguished from object (libidinal); the latter originates through the focusing of a constellation of drives onto a percept. Perception of the percept is the prerequisite of object formation.

³ Hoffer discusses the relationship between hand and mouth in two articles. In the first (1949) he investigates the function of the hand in ego integration and in the development of early ego functions. His conclusions are in accordance with the above statements; but they deal with a later stage than the cavity perception described by me. In his second article (1950), he introduces a new concept, that of the "mouth-self" which is progressively extended to the "body-self" through the activity of the hand which libidinizes various parts of the body. This process also occurs at a later stage than the one discussed in my present article.

2. The second organ which participates in the nursing situation is less evident. It is the labyrinth. Both Isakower and Lewin speak of the frequent presence of dizziness, murmur and noise in the phenomena they describe. This finding is supported by direct observation on the newborn. It has been shown experimentally that the stimulus which leads to the earliest conditioned response in the newborn is a change of equilibrium. The experiment consists in the following: If, after about eight days of life, the breast-fed infant is lifted from his cot and placed in the nursing position, he will turn his head toward the person holding him and will open his mouth. It is immaterial whether the person in question is male or female. What does this experiment show, what is the sensory organ involved in this reaction of the newborn?

When we lift the newborn from his cot and place him in the nursing position, we set in motion in the labyrinth a neurophysiological process of a very special nature. This process is a gravity-induced shift of the endolymph within the labyrinth, resulting in two sensory stimulations of a completely different nature in two spatially separate parts of one and the same organ. The pressure of the endolymph on the lining of the semicircular canals results in changes of the equilibrium sensation; the same pressure will simultaneously provoke auditory sensations in the organ of Corti in the cochlea. The morphological difference between the lining of the semicircular canals and that of the cochlea is responsible for the difference between the two resulting sensations. The sensations connected with the stimulation of the semicircular canals will be dizziness and vertigo, those connected with the stimulation of the Corti organ will be auditory, probably vague, rushing, murmuring, roaring noises which may be similar to the sensations described by Isakower and Lewin (see also French, 1929; Rycroft, 1953; Scott, 1948). We can then envisage that the newborn experiences the being lifted into the nursing position as an interoceptively⁴ perceived experience with all the vagueness, diffuseness and absence of localization that is characteristic of prothopathic sensation.

3. The third organ involved is the outer skin surface. Isakower's as well as Lewin's descriptions emphasize the vagueness of the localization. Isakower speaks of the big and then again small "something," gritty, sandy, dry, which is experienced both in the mouth and on the skin surface, simultaneously or alternately; it is experienced like a blurring

⁴ In the following I will speak of interoceptors and interoceptive systems, using the definition given by Fulton (1938) and Sherrington (1947): "The interoceptors are divided into two groups: (1) the proprioceptors (muscles and labyrinth) and (2) the visceroreceptors (gut, heart, blood vessels, bladder, etc.)."

of widely separated zones of the body. I believe that we do not have to postulate intrauterine memories here. It seems to me rather that this is the echo of an experience that is analogous to that of thirst in the mouth—only that it involves the skin surface instead. Up to delivery the skin surface had been in the least irritating and most sheltering environment imaginable. It was surrounded by liquid and protected even against this by vernix caseosa. After delivery it is exposed to the roughness, unevenness, dryness of the textiles into which we wrap babies. It is inevitable that the stimulation due to these textiles will be infinitely sharper than we adults can imagine; that it will take quite a long time, weeks and months, until the newborn's skin has adjusted to these stimuli and toughened sufficiently to relegate them to the normal environmental background.⁵

It might be assumed that to the newborn the sensations of skin discomfort are indistinguishable from discomfort in the passages of mouth, nose, larynx and pharynx. From our knowledge of the nondifferentiation in the perceptive sectors (and all others) this must indeed be so.

The sensations of the three organs of perception—hand, labyrinth, and skin cover—combine and unite with the intraoral sensations to a unified situational experience in which no part is distinguishable from the other. This perceptive experience is inseparable from that of the need gratification occurring simultaneously and leading through extensive tension reduction from a state of excitement with the quality of unpleasure to quiescence without unpleasure. We do not postulate any memory traces, be they even unconscious, of this situational percept of the newborn. Whether engrams are laid down at this stage also remain unanswerable.⁶ But this selfsame situational experience, repeated again and again, will many weeks later eventually merge with the first visual percept and be present simultaneously with it, remaining attached to it in first unconscious and later conscious visual imagery.

⁵ Two highly pertinent papers of M. F. Ashley Montagu (1953, 1950) came to my attention too late to incorporate his findings into the present paper. Basing himself on some theoretical considerations, and on a series of observations on nonhuman animals (Reyniers, 1949; Hammett, 1922), he concludes that the skin as an organ has a hitherto unsuspected functional significance for physiological and psychological development. Laboratory evidence indicates that in the nonhuman mammals the licking of the young by the mother activates the genitourinary, the gastrointestinal and the respiratory systems. Some evidence is offered that matters may be, if not similar, at least analogous in man (Drillien, 1948; Lorand and Asbot, 1952).

⁶ It is perhaps useful to remind ourselves in this context (and also in reference to the dream screen and to the Isakower phenomenon) that from the beginning Freud (1900) stated that the first mnemonic traces could only be established in function of an experience of satisfaction which interrupts the excitation arising from an internal need. This experience of satisfaction puts an end to the internal stimulus (p. 565).

The cluster of factors which go into the nursing experience of the newborn therefore can be enumerated as follows:

1. The psychophysiological factors of unpleasurable tension and its reduction through nursing;
2. A factor which in due time will become a psychological one, that of activity;
3. The neurophysiological perceptive factors of the oral experience of sucking and deglutition involving a number of proprioceptive sense organs situated within the mouth;
4. Simultaneous sensory experiences of the hand and of the outer skin;
5. Simultaneous interoceptive experiences in the labyrinth.

THE ACHIEVEMENT OF DISTANCE PERCEPTION

On reflection it must be evident that the majority of these factors—with the one exception of skin discomfort—belong to, or at least are very close to, perceptions of changes going on in the inside of the neonate, that is, proprioceptive perceptions. Even in regard to the hand we may assume that the movements do not represent a response to a tactile sensation, but an overflow into the hand musculature of the innervation of the nursing and deglutition activity. As for the labyrinth sensations, these belong patently to the coenesthetic (protopathic) system and share with this the diffuseness, vagueness and lack of localization.

We have to stress again that the whole experience with all its percepts and sensations is centered inside or linked up with the oral cavity and belongs to the modality of contact perception. That modality must also be postulated for the perceptions of the labyrinth which originate on the inside of the body. This contact perception, taking place *inside* of the body, is the crystallization point for the first modality of the perceptive process and is secured with the help of the endlessly repetitive experience of the unpleasure-pleasure cycle.

In the course of maturation, a second modality appears—distance perception in the form of the first visual percepts. Through the baby's unwavering stare at the mother's face during nursing the visual experience is merged into the total experience. The infant still does not distinguish inside from outside, what he sees with his eyes from what he feels with his mouth.

A large number of disappointing experiences—namely, waiting periods intruding between the perception of mother's face and the lowering of need tension through food in the mouth—are required before a differ-

entiation between the two can take place. Until that occurs, mother's face—not the visual percept of mother's breast!—will mean "food in the mouth" and relief from unpleasure. It can be experimentally proved that at this stage—the third month of life—the visual percept of the maternal breast produces no change whatever in the hungry baby's behavior.

That much of this applies to the hand and its sensations, is obvious. After all, the simultaneous activity of the baby's hand during nursing is familiar to every mother. We may assume that also in the hand it is not so much the tactile percept which is connected with the intraoral experience, but rather a proprioceptive percept, that of the contraction and relaxation of the hand muscles which is perceived in the same manner as the contractions of the oral muscles in sucking. That something of the kind must be taking place can be shown in motion pictures, where it is amply evident that in the nursing baby the closure of the hand is performed in the same rhythm as the sucking movement of the mouth. The "taking into" quality of these hand movements appears to me to justify the proposition that they are experienced by the infant as belonging to the sucking movements of the mouth. Perhaps we are justified in expanding this proposition to the child's coenesthetic sensations. When the child is lifted and cradled in the mother's arms, pressed against her body and held securely during the act of nursing, it comes near to the blissful intrauterine state in which need tension never arose and the insecurity of our modern baby cot with its lack of support was unknown.

An excellent illustration of all that I have discussed above has been provided to me through the courtesy of a colleague from Habana, Dr. Carlos Acosta (1955). In the course of the analysis of an adult patient, Dr. Acosta noted a number of unusual dreams, hallucinatoryform visions and similar manifestations, of which I will quote a few.

Case O. V.:

O. V. is a twenty-one-year old white male. He came into treatment because of overt homosexuality. He is an extremely infantile individual, given to daydreaming which borders on the hallucinatory, with an I.Q. of 74. Both the testing psychologist and Dr. Acosta agree that the patient's I.Q. actually is higher and that the test situation is distorted through the patient's emotional difficulties. It was not possible to determine whether he is a case of arrested development or whether his symptomatology is the consequence of a regression; I would lean toward the former.

Four communications of the patient which bear on our discussion follow:

1. The patient visits his girl. Sitting next to her he falls asleep and on awakening he peeks into her décolleté and sees "the breast cloudy, with spots, like a glass from which milk was poured out, the glass remaining covered with a

film of milk, forming spots," which he compares to "*manchas en mujeres embarazadas*" ("chloasmata in pregnant women").

2. Lying on the couch during treatment he hallucinates as follows: "There is a piece of white bread, shaped like a pear, with its point toward me, approaching me, coming closer and getting bigger. . . . Funny, now it has jumped suddenly to my thumb and is much smaller."

3. The patient reports on another day that the previous morning the chore of boiling the breakfast milk filled him with resentment because while the milk was on the fire, he was masturbating and indulging in fantasies, but worried that the milk would boil over. In his masturbatory fantasy he imagined that he was having intercourse with his girl and was sucking her breast. He associated the milk boiling over in the pot with that coming out of the girl's breast and with the sperm spurting out of his penis. In this fantasy part of the sperm was going into the vagina (and spurting out of the breasts), another part was splashing onto the floor.

4. When confronted with maternal-looking women, he gets a peculiar sensation when they look at him. He feels the inside of his mouth contracting (Analyst's note: like a contraction of the buccal and labial musculature), and he associates to this a "displeasure" in the stomach, like heat or emptiness. He had the same feeling in his mouth when he hallucinated the "clouded breast" vision of his fantasy. The contraction of his mouth muscles forces him to turn away and hide his face from such a maternal woman, because he does not want her to see him making faces. He remembers that he had this feeling as a very small child when mother carried him in her arms at her breast from one room to another; he also remembers the feeling of dizziness and nausea. This he has also at present when riding on a bus and "the air rushes into his mouth." The circumstances leading to his mouth sensations often also provoke similar sensations in the inside of the belly, which then contracts in the way the inside of the mouth contracted.

CONSIDERATIONS SUGGESTED BY THE CASE MATERIAL

In the various dreams and observations reported by Lewin and Isakower as well as by an ever-increasing number of analysts who in the meantime have written on the subject, a large number of the constituent elements of the picture we are concerned with can be found in one place or another. Some of these elements belong to dreams and normal states, others are found in pathological conditions. The case described by Dr. Acosta seems to bring together in one and the same individual all these elements. I feel, therefore, that it makes further examples repetitive because it is sufficiently representative of the large body of observations published on the subject.

Communications No. 1 and 2 describe phenomena which are strikingly similar to and in some particulars even more vivid than those reported by Isakower. That the patient brings together the breast-shaped object with his thumb, has particular significance for our further remarks. It impresses me as an example of the mode of operation of what, for want of a better term, we have to call the "psyche" in early infancy; this "psyche" causes different percepts with similar functions to be merged into one another; this merging is the result of a lack of differentiation. In the example quoted above thumb sucking and nursing have the same function, namely to release tension. The percepts are different, but the function is identical.

But Communication No. 4 suggests conclusions which are more far-reaching. Here sensations in the oral cavity, which refer to subliminal mnemic traces of the nursing situation, are brought into relation by the patient with sensations within the abdomen, on the one hand, envelopment in the mother's arms and body, on the other.⁷

In the case of Dr. Acosta's patient, the hand and simultaneously the equilibrium sensation (both in the "being carried" memory) as well as the intra-abdominal sensation are combined with the intraoral experience (French, 1929; Rycroft, 1953). It is this summative aspect of the nursing experience which has motivated me to speak of the inside of the mouth as the primal cavity. I believe that the data provided by the reports of Dr. Acosta's patient rather convincingly substantiate the opinion held by

⁷ Two points are worth mentioning, although they do not belong into the framework of the present article. One is O. V.'s sensations of muscular contractions of his mouth region, which he associates with fantasies connected with the breast, with breast feeding and with seeing "maternal-looking women." He is so intensely conscious of these contractions that he has to avert his head for fear that "the woman may notice that he is making faces." This suggests that the *Schnauzkrampf* symptom in the schizophrenic may be connected with wishful fantasies of breast feeding and with the mnemic traces of the proprioceptive percept of mouth activity during nursing.

The other point is that, when the patient travels on a bus and "the air rushes into his mouth," he has a feeling of dizziness and nausea. He says that this feeling is like the feeling he had as a very small child when his mother carried him in her arms at her breast from one room to another. We may well add this finding to Freud's assumptions on the origin of flying in dreams (1900, pp. 271 f.; 393 f.) on one hand, on the other to his hypotheses on the production of sexual excitation (1905, p. 201). In the latter he specifically states that the stimulus of rhythmic mechanical agitation of the body operates in three different ways: on the sensory apparatus of the vestibular nerves, on the skin, and on the muscles and articular structures. He even mentions the impact of moving air on the genitals. He connects these childhood experiences with later developing train phobias. The contribution of Dr. Acosta's patient appears not only to confirm fully Freud's findings, but to add to them the information that the origin of the multiform traveling phobias may reach back to the nursing period of the infant in the first year of life.

Isakower, Lewin, and myself: intrauterine fantasies at a later age are based on a regressive imagery of early intraoral experience.

The patient's description bears out what I had postulated earlier: the oral cavity, in which the interoceptive and exteroceptive perceptive systems are united, forms the basis of a perceptive mode (we might call it "perception according to the cavity mode"), in which inside and outside is interchangeable and in which furthermore a variety of other sensations and perceptions find their focus.

It may be added here that this early intraoral experience consists of taking into oneself the breast while being enveloped by the mother's arms and breasts. The grownup conceives of this as two separate experiences. But for the child they are one experience, single and inseparable, without differences between the constituting parts, and each constituting part being able to stand for the whole of the experience. This is essentially the paradigm of Lewin's formulation: "to eat and to be eaten." It is a most vivid example of the mode of functioning of the primary process.

PERCEPTION OF ENVIRONMENT VERSUS PERCEPTION OF SOMATIC EXPERIENCE

There are certain aspects in the preceding discussion which are reminiscent of the brilliant, but in part erroneous, speculations of Silberer. Lewin has referred to them, and stressed how misleading many of his concepts were. In one of Silberer's articles, "Symbolik des Erwachens und Schwellensymbolik überhaupt" (1911), he states that symbolic imagery can express two things, content and the state or the functioning of the psyche. I believe that in my foregoing discussion it has become evident that his assumption has to be revised and that the infant's as well as Dr. Acosta's patient's experience can be separated into two perceptual aspects:

1. The aspect of perception mediated to us by our sensorium. This is the perception of the outside, the perception of things and events.
2. The second aspect is that of the perception of states and of functions; not, however, the states and functions of the psychic apparatus of which Silberer speaks, but rather the states and functions of the musculature, of joints, of position—in other words, an interoceptive perception. Dr. Acosta's patient describes a few of these perceptions of states and functions; I postulate their existence in the first period of nursing and probably, in a progressively decreasing measure, throughout the first year of life.

These two perceptive aspects, however, do not encompass the totality of the experience. We have already stressed several times that an instinctual gratification is connected with it. This implies the presence of affects

and emotions of some kind, which provide the percept with its valency and with the quality of an experience. In the adult, affects may evoke visual imagery or, vice versa, visual imagery may evoke affects; but the two, affect and visual imagery, originate at two different stages in the infant's development. One may speculate whether the percept activates also the arousal function of the reticular system which, according to Linn (1953), is capable of mobilizing further affects.

LEVELS OF INTEGRATION AND PERCEPTUAL FUNCTION

We can now examine the degrees of regression attained in the dream screen described by Lewin and in the Isakower phenomenon. In dreaming, we relinquish the level of the verbal symbolic function and regress to the level of symbolic imagery (Freud, 1916, p. 143).

In the infant, the level of imagery is presumably reached after the third month; that of verbal symbolic function, approximately around eighteen months. According to our experimental observations, we may assume that somewhere from three to eighteen months the infant perceives mainly in images and operates mentally with the memory traces laid down by visual percepts. It is around eighteen months that verbal proficiency becomes sufficiently established, enabling the infant to begin to replace in his mental operations an increasing number of visual percepts by verbal symbols.

We believe that the infant passes in the course of his first two years through three stages, or, as we can call them also, through three levels of integration of increasing complexity.

1. The first level is that of the coenesthetic organization, when perception takes place in terms of totalities, because it is mediated mainly through the coenesthetic system on one hand, through interoceptive and tango-receptors on the other.

2. The second level is that of diacritic perception, when distance receptors come into play, when visual images become available, but when the mnemonic traces of these images are still impermanent, at least in the beginning. This is due to the fact that they are in the process of acquiring what Freud (1915a) calls in his article on the "Unconscious" in a specific context "*topisch gesonderte Niederschriften*" ("topographically separated records") (p. 108).

3. The acquisition of language marks the inception of the third level of integration. This presupposes an ego development, the development of the abstractive capacity, called by Kubie (1953) the symbolic function.

In waking life adults operate on the last of the three, on the level of

symbolic function. In dreams they normally regress to the level of visual perception and imagery. This is the level at which Lewin's dream screen can become perceivable.

In his paper "The Forgetting of Dreams," Lewin (1953b) with the help of a reconstructive procedure arrives at formulations closely resembling mine. He deduces logically that if a regression occurs from the visual imagery level at which the dream functions, then there should be memory traces older than these pictures. Thus, as I do, he sees these memory traces "more like pure emotion," made up of deeper tactile, thermal and dimly protopathic qualities which are in their way "memory traces" of early dim consciousness of the breast or of the half-asleep state. And, if I read him correctly, he believes that it is to this level of integration that the subject regresses in the so-called blank dream.

It follows that the level of regression involved in the Isakower phenomenon harks back to an earlier period, that which precedes the reliable laying down of visual mnemonic traces or at least to a period at which a significant number of visual mnemonic traces has not yet been accumulated. I would be inclined to say that while the regression of the dream screen goes to the level of the mnemonic traces laid down somewhere between the ages toward the end of the first half year and reaching to the end of the first year, in the Isakower phenomenon the regression reaches to the traces of experiences preceding this period. Obviously, these age ranges represent extremely wide approximations.

We may now examine the dream screen in the light of our assumptions. Following Freud, Lewin has pointed out that the dream itself already marks a disturbance of sleep. The function of the dream is to act as the guardian of sleep. The dream screen, which represents the breast, is derived from the infant's experience of going to sleep after nursing at the breast. This is exemplified by Dr. Acosta's patient who, when describing and reliving his hallucinatory experiences, frequently becomes drowsy and falls asleep on the couch. We might say that the dream screen described by Lewin is the achievement of a wish fulfillment, the gratification of a need, the symbolically used mnemonic trace of satiated quiescence. The visual dream, on the other hand, is the symptom of the ego having become alerted to an extent sufficient to abolish the complete regression into dreamless sleep and to enforce a reversal of the regression to the level of visual perception, the level of three to eighteen months. The quality of satiated quiescence in the dream screen places the regression into the earlier part of this period.

It is not likely, however, that the dream screen is the visual image of the breast. It is much more probable that it is the result of a composite

experience, which in the visual field represents the approaching face of the mother, but in the field of the other percepts involves the sensations within the oral cavity. This is perhaps also an explanation of the fact that in so many of the dream screen reports the dream screen appears dark, at other times colorless, amorphous. Lewin actually speaks of the dream screen being like a composite Galtonian photograph in certain dreams—only he conceived this as a blending of different images of the breast. I would rather call it a synesthesia of many different senses, the visual constituent of which is derived from the percept of the face.

What, then, is the relationship between the blank dream discussed by Lewin and the Isakower phenomenon? Perhaps it replaces in the sleeping state what the Isakower phenomenon is in the predormescent and pathological states. The level of regression in the two phenomena is comparable. Lewin considers the regression a topographical one in the blank dream. In the light of our findings on infant development we may add that it is also a genetic regression (in the terms of Freud, 1916, "a temporal or developmental regression," p. 143). It goes to a level which is earlier than the regression to the visual mnemonic traces. It goes to the level at which mnemonic traces were laid down in sensory modalities other than the visual ones.

This may provide the explanation why the blank dream is devoid of visual content. We know from Freud and from our daily experience with patients that the dream operates primarily with visual images. It operates much more infrequently on the higher level of verbal symbols; Lewin mentions this and Isakower (1954) in particular has commented on the phenomenon in his paper "Remembering Spoken Words." But the dream also has difficulties in representing emotional content as well as the mnemonic traces which belong to the period in which they were not associated to imagery as yet. At that early period in life emotional content of a very primitive nature and the mnemonic traces of bodily functions were associated to the traces of coenesthetic functioning. It is in good accordance with this that when reporting blank dreams, the subjects comment on the tone of affect which accompanies it, whether that be an affect of happiness or one of terror. And the coenesthetic mnemonic association is confirmed by the fact that in some cases the blank dream is accompanied by orgasm—in the case of one of my patients orgasm could only be achieved in a blank dream.

We now may follow Isakower in his careful discussion of the processes which take place in the ego when a regression to the phenomenon observed by him occurs. He postulated two such consequences:

1. A disintegration of the various parts of the ego and its functions.
2. A dedifferentiation of the ego.

Isakower describes, within the many-faceted process of going to sleep, one specific consequence of the disintegration of the ego. This is the change which takes place through the withdrawal of cathexis from the outward-directed sensorium and a concomitant increase of the cathexis of the body ego. This formulation of the going-to-sleep process (in the adult) has an exact counterpart in our observations on the way in which the newborn functions. The newborn is incapable of perceiving the outer world. This has been shown in numerous findings of experimental psychologists as well as in our own. The sensorium is not yet functioning because, in terms of the dynamic viewpoint, the newborn has not yet cathected it.

THE STIMULUS BARRIER AND THE DISTRIBUTION OF LIBIDINAL CATHEXIS

This experimental finding enables us to understand Freud's concept of the stimulus barrier from the economic and the dynamic viewpoint, from that of the distribution of cathexis. The stimulus barrier is not to be understood as an obstacle in the path of the reception of stimulation originating in the environment. It is to be understood as consisting in the *uncathected condition of the sensorium*. In other words, the receiving stations are not energized as yet.

Conversely, the totality of the available cathexis of the newborn is directed toward his own body, a state of which we speak as the primary narcissistic stage. Isakower assumes an overcathexis of the body ego in the sleeping adult. Whether in the newborn one can speak of an *absolute* overcathexis of his own body, is questionable. There can be no question, however, about the disproportion between the infinitesimal amount of cathexis directed by the newborn toward the sensorium as against the enormous amount of cathexis allotted to his own body. We may speculate on this disparity in the distribution of cathexis. In a way, this condition is a continuation of the intrauterine situation. During the intrauterine period the mother has two roles: that of protecting the foetus from danger. In this role she carries out all the sensory and action functions needed for the purposes of adaptation to the conditions of living. Her second role could be described as that of assimilation because she also performs all the embryo's metabolic and catabolic functions. But after birth, these two roles are redistributed. The protective role against outside stimulation which the mother had during the period of gestation will be continued, for she still has the task of performing for the newborn the func-

tion of the sensorium as well as those of the action system. However, she can no longer perform the newborn's metabolic functions as she did during pregnancy. To survive, the organism of the newborn has to take over these functions and has to cathect the interoceptive system for the purposes of metabolic functions. Accordingly, toward the own body there will be no stimulus barrier. Therefore the responses of the newborn are a function of the messages transmitted by the interoceptive system; but as there is no localization within the interoceptive system's reception, these messages will be undifferentiated. They will operate in terms of the economic viewpoint, that is, of the pleasure principle. Such perceptions of himself as the newborn receives are of a total or global nature and cannot be assigned to specific systems; therefore the motor apparatus will respond to them by diffuse, undirected excitation and overflow.

In the adult's falling asleep as described by Isakower we have the withdrawal of cathexis from the sensorium and the increased cathexis of the body ego. We may add to this that the motor pattern of the sleeping adult also approximates that of the newborn in its undirected responses. The basic difference between the adult and the newborn lies in the fact that while the adult cathects a body ego, an organized structure of body representations in the psyche, there is no such thing in the newborn. The newborn has still to develop the body ego, and what we witness in the newborn is not a withdrawal of cathexis but a nonexistence of cathexis.⁸

CATHEXIS AND PERCEPTUAL EGO FUNCTIONS

The falling apart of the ego functions in the adult as described by Isakower might be spoken of metaphorically as a consequence of a weakening of the cohesive forces of the ego, which is a result of the process of falling asleep. In the newborn these cohesive forces have still to come into being and are only developed as a function of the constitution of the ego. It is an attractive hypothesis to assume that when the ego is weakened, be it by the process of falling asleep or by pathological processes, one of the first attributes of the ego, its cohesive force, will be diminished and the co-operation of the ego constituents ceases; or, in terms of present-

⁸ It will be seen from this discussion that when I speak of the phase of nondifferentiation, I am referring to something much more inclusive and general than what Hartmann, Kris, and Loewenstein have described in "Comments on the Formation of Psychic Structure" (1946, p. 19). They refer specifically only to the absence of differentiation between the ego and the id, and the undifferentiated phase is the one in which both the id and the ego are gradually formed. My concept is much more closely allied to Hartmann's discussion of the same concept in "Ichpsychologie und Anpassungsproblem" (1939).

day communication theory, "intracommunication" becomes impossible (Coblener, 1955).

The second consequence of the regression in the Isakower phenomenon is spoken of by him as a dedifferentiation of the ego. He believes that the dedifferentiation takes place somewhat later in the process of going to sleep than the dissociation of the ego components; therefore, when the body ego has arrived at this stage, when it is overcathected, it has reactivated an archaic developmental level. He stresses that on this archaic level perception is directed toward the processes of the subject's own body, toward the changes in intracorporal tensions, and not toward the external stimuli which may provoke them. He mentions that in the waking adult this mode of perception remains in function in one organ only, the vestibular organ. There it is the perception of intracorporal changes informing us (and frequently in a very disagreeable manner, indeed!) of changes taking place in our surroundings. We have nothing to add to these propositions of Isakower. By and large, they have been paralleled by our preceding discussion of the newborn's progressive development which corroborate his conclusions.

Freud (1915a, p. 111) stated that affects and emotions represent our awareness of discharge processes. The intracorporal sensations of which we have spoken actually are discharge processes. This may be the reason for their close connection with affects and in particular with anxiety.

SUMMARY AND CONCLUDING REMARKS

We may summarize by saying that adults, who operate on the level of the symbolic function, will regress normally to the level of visual perception and imagery in the dream; it is at this level that Lewin's dream screen becomes perceivable. When a disturbance of going to sleep occurs, as in febrile disease, or when a dissociation of the ego in waking states takes place, then a further regression to the level of the coenesthetic perception may occur in which the Isakower phenomenon becomes available.

The level of coenesthetic perception belongs to what I would call the experiential world of the primal cavity. It is the world of the deepest security which man ever experiences after birth, in which he rests encompassed and quiescent. It is to this world that man escapes when he feels threatened by pathological conditions in febrile states; also when in the waking state the ego becomes helpless through dissociation, as in toxic conditions. The method of escape has a double mechanism: the withdrawal of cathexis from the sensorium, on one hand, the hypercathexis

of the body ego, on the other. The particular sector of the body ego representation which seems most highly cathected is the representation of the primal cavity. This distribution of cathexis makes the experience of the Isakower phenomenon possible.

From the point of view of therapy these considerations underscore the necessity of understanding the patient in terms of earliest orality, as has been stressed repeatedly by Lewin. When we deal with the adult, however, the approach to earliest orality is not a direct one, for the mnemonic traces of earliest primal cavity experiences as such are not available to the patient and cannot be communicated to him by the therapist in terms of these experiences—the terms for them do not exist in language, they can only be paraphrased. Many, but certainly not all mnemonic traces of the primal cavity experiences are attached in the course of development to memory traces in the nature of images, acquired and mediated by the visual and by the auditive senses. Later still, in the course of the elaboration of the symbolic function, word representations will be attached to these images. This is the linkage between the memory traces of object representations and the memory traces of word representations. The therapist, in his therapeutic endeavor, has to travel this road in the inverse direction, from the abstractive word to the concrete representation that evoked the original affect.

A better understanding of the intraoral experience and of its ramifications into experiences of hand and skin surface suggests nonanalytical therapies in the case of the deeply regressed psychoses. Up to now such therapies have scarcely yet been attempted.⁹

The world of the primal cavity is a strange one: indistinct, vague, pleasurable and unpleasurable at the same time, it bridges the chasm

⁹ This communication was already in the hands of the editor when Louis Linn's paper "Some Developmental Aspects of the Body Image" (1955) was published.

His remarks parallel in many aspects the views expressed in my present paper. He reports on M. Bender's recent experiments in simultaneous sensory stimulation of adults. Bender's findings (1952) corroborate our direct observations on perceptual development and function in infants and their psychological concomitants.

Bender investigated two simultaneous stimulations of the *same* sensory modality. Our own propositions refer to simultaneous experience of stimulation in *different* sensory modalities. Linn's own work also deals with the fusion of two sensory modalities into a single perceptual event. We are referring to the patient who, when touched simultaneously on face and hand, reported this as "the hand of my face." The reader will note the similarity between Linn's observation and the conclusions drawn by me on the blending into a single event of the contact percept and the visual distance percept in earliest infancy (see pp. 222, 229). I am inclined to assume that the body ego originates from the sensations experienced in the oral cavity. The latter are vastly predominant in earliest infancy. This is in agreement with Linn's ingenious hypothesis on hand-mouth identity and with his explanation of the scotomization of the hand in adult perception.

between inside and outside, between passivity and action. The earliest sensory experiences of events taking place in the primal cavity are dealt with on the level of the primary process, yet they lead to the development of the secondary process.

In its nondifferentiation this world is the matrix of both introjection and projection, which therefore appear primarily normal phenomena, though we become really aware of their proliferation in pathological processes.

The perceptive modality of the primal cavity will also form the matrix for later developmental stages of perception in sensory organs with a very different function. The specific morphology of the particular organ will determine the mode of function—yet it will hark back to the inside-outside mode established by the intraoral experience, as for instance in the distinction between the "I" and the "non-I," the "self" and the "non-self."

We may say in conclusion that the mouth as the primal cavity is the bridge between inner reception and outer perception; it is the cradle of all external perception and its basic model; it is the place of transition for the development of intentional activity, for the emergence of volition from passivity.

When, however, the body relaxes diurnally in the passivity of sleep, the activity of the mind will retrace its way toward the primal process, and the primal cavity then becomes the cavernous home of the dreams.

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