PROLEGOMENA TO A PSYCHOLOGY OF SIGNS:

I. THE SYMBOLISTIC REVOLUTION

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Throughout their history men have noticed and have endeavored to explain wherein and how they differ from other living beings. In ancient times the account was in terms of a rational soul. The middle ages put the difference in supernatural qualities. Modern times witness an affirmation of continuity between men and their world first, in terms of a physical determinism and second, within the conceptual framework of an all-embracing biological evolutionism—*Nihil est in homine quod non prius in amoeba erat*. Despite the monistic and reductionistic winds in our intellectual climate the facts of difference remain, ready to observation if not yet pliable to explication. Where difficulty of explanation has been shown repeatedly one should not hope for a viewing which would yield complete clarification. Our purpose here is to suggest a possible approach to the problem of understanding what might be regarded as uniquely human processes: the creation and use of symbols. In pointing to these processes we are not suggesting that they are the sole differentia of what is human nor do we claim any originality in the idea itself (cf. Cassirer, 3; Langer, 13; White, 31; Mowrer and Kluckhohn, 24 *et al.*). Rather we shall propose some ideas on the evolution and nature of symbolistic processes.

I

The immediately apprehended or that with which all knowledge begins may be conceived as an event-continuum. Within this processual reality it is possible to distinguish various features which in turn become the first-order data of the various specialized sciences. The terms "organism" and "environment", "subjective" and "objective" are descriptive polar and correlative terms indicating perspectives from which the immediately apprehended may be viewed; they are terms referring to distinguishable but inseparable aspects of the experience-activity continuum (cf. Schrickel, 28). This continuum may further be viewed as having at least four dimensions. First, there is the absolute adaptive or organismic relatedness, at any given moment, of the particular organism to the particular environment, of part of organism to part of environment in whatever selective pattern that may hold for that moment. This is the dimension of sensation and response, of experience and act *per se*. Second, there is the organizational, implicative, "logical" dimension; the interrelation of parts of experience and/or parts of response; that which enables the integration of part to part. Both dimensions are functions of the polar and correlative foci of organism and the environment. Both are aspects of the event of experience, the event of behavior as immediately apprehended. Third, there is the intensity, insistence, frequency, valuational, motivational or emotional dimension. This also is involved in the other dimensions and is, like them, a function of both the environment and the organism. The third dimension

is the basis of preference or selection, of discrimination, of ordering in terms of relative importance. It is the value dimension which sets the mode under which the other two dimensions are momentarily organized. All three dimensions constitute the *dynamic structure* of experience-activity (cf. Klee, 11). But the aesthetic, formal, and dynamic dimensions constitute a conceptual analysis which is incapable of taking into account the facts of change in experience and alteration of response. There must be added, therefore, the concept of historicity (cf. Allport, 1). This is the temporal dimension of non-recurrent sequence, of shifting in choice from one mode to another, also of repetition of a particular mode. Together, the four dimensions constitute the basic features of dynamic structural alteration, repetition and/or persistence in time. They are what White (31) would call the descriptive dimensions of evolution. As such they constitute a framework within which the natural history of experience-activity must be conceived before any further analysis can be fruitfully made.*

A brief survey of the behavior of existing animal and plant forms in their current phylogenetic classification (cf. Maier and Schneiria, 17) reveals (1) a gradual increase of organizational complexity; (2) a concomitant increase in simplicity in the sense of specialized differentiation. This differentiation-organization process may be identified in at least three areas. (1) Because of bisexuality, it may occur in primary intersexual relations, i. e. in "love". (2) Owing to coexistence of individual organisms, it may develop in an intraspecific or social direction — as in cooperative and competitive behavior — or in the interspecific sense of the symbiotic or parasitic. (3) The specialization-organization concept has been used effectively by Werner (30) and Lewin (15, 16) and others in describing individual development. These three possibilities may or may not be functionally related. Again, they may or may not be partially or wholly, primarily or secondarily, advantageous or disadvantageous for the same or other individual (s) or species. Further, such emerging traits are always organized in some way with their coexistents. However, what is particularly significant for our purpose is the fact (1) that such traits exist potentially and (2) that these traits often become important in and of themselves. The fact that such traits may or may not be of value in the total economy of the individual or group is not our immediate concern here.

Psychologically, the organization-specialization continuum implies an increasingly complex set of both physical and social relations between organism and environment; and this would apply both phylogenetically and ontogenetically. For the given individual, increasingly specific and complex experience and activity are implied. At the protozoan level relatively few differentiations in discrimination can be discerned from the behavior of these forms. For example, as many protozoa live in a liquid, no such specific behavior to that liquid as a "thirst" response need develop, as compared with the discriminative functions of mammals in this regard. As such, most of the protozoan's experiences would be syncretically complex, diffuse. At the same time, its experience would be multivalued, the liquid milieu simultaneously providing oxygen and other necessary chemicals on a kind of "tie-in" or "prepackaged" basis.

* The above dimensional analysis is similar to several other analyses which have recently appeared in the literature. Attention is called specifically to the work of Duffy (5, 6), Leeper (14), Maslow (18, 19, 20), Bronfenbrenner (2) and White (31).

Although evidence is available concerning some of the possible discriminations of protozoa — especially as between nutritive and noxious materials — such selections as are made primarily involve direct, immediate physical contact. While this type of contact is true also of multicellular organisms, in these latter there is a relatively spatiotemporal separateness in experience-activity which is made possible by *perceptual* processes, especially those of the exteroceptive type. Again, and in contrast to such multicellular types as the arthropods and chordates, any response would tend to produce more immediate consequences (reinforcement or destruction) which would be of such extensity and degree as to involve the entire organism. Consequences would be of life-and-death proportions, rather than of selective parts of organs (cf. Steinbeck and Ricketts, 29). Generally speaking, protozoan behavior is immediately adaptive (cf. Mowrer Kluckhohn, 24) rather than adjustive or anticipatory. Any anticipations protozoa have are genetically based, derived from natural selection. This immediate-total character of adaptation is not lost but actually increases in multicellular forms. And although direct adaptation does lose for the more complex individual some of its significance relative to the whole of experience, adaptive responses should not be regarded as functions of just some specialized tissues and organs. Most psychologists carry this specialized “functionalistic” oversight into their descriptions and explanations, it being only recently corrected in some psychoanalytic and psychosomatic accounts of human experience and activity.

At more complex levels of the phylogenetic scale discrimination becomes more apparent; experience and activity at these levels are seen to involve relatively more learning and anticipation. The organism is more separated from and more autonomous within its environment. Instead of being immersed in its milieu the organism acts more frequently towards selected features of its environment as signals of consequences. In the spatiotemporal sense, some preliminary discriminative activity is noticed as increasing from the lower protosignalistic metazoan up through man. In other words, particular experiences and their consequences tend to become specialized and of limited value to the organism's total economy. Although the whole organism acts, its activities vary from time to time and from stimulus complex to stimulus complex. Thus if greenness of a leaf is a cue to food, actual food might be ignored, at least temporarily, if it lacks the selective dominating sense cue (greenness). This may be so even though direct body contact with the non-green food yields certain odor or taste experiences which also indicate the object as food. (Bees may be enticed by color to false goals, after selective training to a color and before experimental extinction has occurred; or they can be made temporarily to ignore foodstuffs by removing the colorations to which they had been trained.) What serves as a spatiotemporally distant signal of some value (experience of greenness as a signal of food) may be considered to become in and of itself at least temporarily more important both absolutely and relatively as the more complex levels of the phylogenetic scale are reached. In terms of learning theory, ultimate reinforcement becomes increasingly spatiotemporally distant from the triggering situation which sets off the activity which in turn might accomplish the final reinforcement. From the point of view of the psychologist, determination of the locus of reinforcement becomes more difficult on the more complex levels. For example, at what point on these levels does food become satisfying? At sight? In the mouth? In the stomach? In the

cells of the body? And in the last case are we in any way conscious of cellular satisfaction?

We could grant each level, stage or area of satisfaction its own value, even though such values may be quite transitory with regard to some such value as may attend reinforcement of tissue needs. Actually, two types of value are involved. First, there is direct organismic or adaptive value. Second, there is contextual or implicative value; value implicative of something else, something which in a hierarchy of values is relatively and absolutely more important. Thus a particular color signifies both itself (organismic value) and by contiguity (accidental or regular) it may also signify food (contextual value). Food is of greater value than a color in the total life economy of the organism. Yet this in no way denies the value of a color as such in its direct effects upon the organism. An organism which responds to food via colors has shifted from direct, organismic adaptation to food to an indirect, contextual, or adjustive relation to color-food. In effect, response is to color *and* food, each having its own value, even though response of most species is such that food values dominate their acts.

II

Over the phylogenetic scale we note an increasing specialization in each of the first three dimensions and a concomitant development of formal complexity and relatendess both intrinsic in and extrinsic to each other as manifest in specific experiences and acts. All this makes for increasing the adjustive possibilities and probabilities of the organism in service to the "traditionally" dominant value modes of nutrition, respiration, reproduction, etc. Along with increased efficiency of adaptation through adjustment a relative increment of value emerging in some of the seemingly unimportant modes (from a strictly survival point of view) to account for what might be regarded as specifically human characteristics. We have reference here to the modes of signal and/or instrumental types of response themselves. Out of the physiognomic, multivalued experiences and actions of earlier stages emerge on the human level specific experiences and acts which have their own special values. Even though the use of signals and instrumental responses enables satisfaction of the so-called dominant values once these are momentarily achieved, there can occur an increase in non-traditional values (both in number and individual intensity) which permits momentary emergence and dominance of these latter.

The emergence of "traditionally" subordinate values from their cue or instrumental relationships has been largely neglected. This is due to widespread interest in theoretical developments in psychology consequent upon and logically derived from the conditioned response approach to selective behavior. The interpretations of psychologists trained in the behavioristic-functional tradition has been largely dominated by the experimntal canon of obtaining cooperation from subjects by controlling one of the more "primitive" (in order of appearance) modalities. This technique made possible expansion of our understanding of the discriminative and instrumental behavior of all animals. Yet emphasis upon stimulus substitution has directed attention almost exclusively toward the instrumental values of stimulus and response and to neglect of the direct values of these; e.g. observation of earpricking to a buzzer has been obscured by concern with the response to electroshock. In brief, such conditioned response concepts accounted well for some of the ways in which

the important values of food, sex, thirst, respiration, avoidance, etc. are achieved but it fails to account for many other values and the experiences and behavior which these entail. It is our purpose to develop a point of view bearing directly on these usually overlooked and certainly underestimated phenomena which lie beyond the scope of conditioning theory. We hope thereby to clarify in part, at least, the uniquely human condition.

An event cannot become the signal of another event without its simultaneously being experienced in some sense for its own sake; however an event may be regarded as related to other events it must be experienced as discrete, self-sufficient, as "being" in its own right. There are no relations without relata. On the other hand, relations are the *sine qua non* of relata or individual phenomena; discrimination is possible only among related events. What an event is, how it is to be taken, is a function then, both of what it appears to be in itself and of the relations in which it occurs with other events. Hence there are signs only when something is signified; and being a sign of being a significatum is dependent upon the relation of signification. To be a sign an event must be (and is) experientable as itself as well as signifying some other event.

This analysis must be recognized for the formal, static reconstruction that it is. Actually, most signal behavior observed suggests that the organisms involved more frequently experience that they take as signals in an almost exclusively referential or instrumental sense; the signal is rarely experienced as absolute or as an event which occurs in its own right. In the vast majority of cases the animal seems to be experiencing the signal as a contiguous part of a larger "physiognomic" (Werner, 30) whole which includes some end (usually important for survival) and in no way is his behavior *interpreted* as involving experience of the signal as an end in itself. It needs to be noted, however, that what seems to be operative in our observations and in our experimental designs is our own pervasive concern with instrumental object and events. Our dominant interest in know-how (cf. Wiener, 32) is reflected in our observations and experimentation.

It is suggested here that the experience of many of the lower organisms whose behavior we observe is much more complex than it has been taken to be by most psychologists. Perhaps it approaches in many instances the order of complexity which characterizes our own experiencing and handling of food: a complex, syncretic, immediately apprehended "given" of particular color, sound, taste, odor, touch, and other aspects. All of these characteristics of what is experienced may perform varying functions in the anticipatory acts which are preparatory to food ingestion. They may also function in the digestive processes later on. Again, a dog conditioned to respond with leg flexion to a buzzershock complex may experience the shock as a noisy upset not as "*shock-plus-buzzer*." The latter associative-type distinction derives from our own symbolistically developed categories (cf. Klee, 9, 10). That the animal can be trained to discriminate shock from buzzer proves only that he is *capable* of making such a distinction; it does not prove that he natively discriminates in this associative manner. The organism's original experience is probably syncretically complex and multivalued with shock or food dominating the whole but not excluding the other substantive, formal and valuational features of the experience. On the activity side we have observed selective responses which over a period of conditioning drop out, are suppressed, as in subordination to a more effective action pattern; e. g., the original earpricking

of the dog to the buzzer tends to disappear. Again, a dog may be trained to salivate to mild electroshock. Later it may take quite a jolt, sufficient under other circumstances to produce trembling or crouching (if the shock cannot be avoided) and yet maintain the salivary response. In the former case we might not recognize the direct or primary value of the shock whereas in the latter we would. By further intensification of the shock we could establish food as a signal of the shock. Loud noises, very bright lights might be conceived as functioning in similar manner. (cf. Schoenfeld, 27).

Some of the end-experiences and end-acts being subordinate to and almost submerged in the "traditional" motives of which they were an implicit part sometimes (at least for some humans) emerge, become explicit, develop into expressions in and of themselves. Vocalization, which may earlier have been a subordinate accompaniment of other behavior, now becomes — in a sense — song or vocalizing in and of itself. Color and sound, touch and movement, often emerge and momentarily dominate experience and activity. Such emergent experiences and acts are clearly seen first in the arts, in play, in song and dance. Later they are frequently re-used—often in perverted fashion—to other ends such as communication. Throughout, however, these emergents probably retain some of their original multivalued, syncretic character and never become completely autonomous. This is one of the bases of metaphor, analogy, myth, ritual and other processes underlying the ongoing extension of human sharing, enjoying and understanding. (cf. Schoen, Schrickel and Ames, 26). From the song the word is slow to develop. The limited simplicity of specialization of form, of instrumental significance which the word bears, forced upon it by social agreement, belies its earlier seeming isomorphic relationship with the event it is now made to signify. That may be why the young of each succeeding generation tend initially to reject recognition of the arbitrariness of language and convention. Many words seem more invested than others with the primitive myth, magic and song qualities which facilitated their origin (cf. Cassirer, 4). Still other words are reinvested with alien experiences and acts and are put thereby into a looser, multi-valued usage sometimes dominated by such traditional modes as fear or anger.

What has emerged need not tend toward increasing autonomy nor be relegated to syncretisms dominated by traditional modes. New syncretisms as occur in new poetry, music, art, language and science lead to the appearance of new and often more complex modes. These new modes may or may not contribute to improvement in adjustment. On the one hand are new symbolizations of a science which makes identification and anticipation of more nutritive diet possible. On the other are the systematic delusions of the paranoid personality. These uses of what has emerged can be exemplified at length. What concerns us here is the nature of these end-experiences and end-acts, not how they may integrate with and serve or modify traditional modes. (Cf. Kluckhohn and Murray, 12, pp. 17-18, on mode-pleasures and end-pleasures.)

III

Any experience or act may be taken or done in and of itself and *need not* imply anything beyond itself. Yet as it occurs it bears the dimensions of substance, form and value and

hence is meaningful or significant within itself, has its own momentary "logic", is its own motivation or value. In this sense, each event is momentarily "equal" to all others. Prior or subsequent events *may* relate the immediate with the rest of experience and activity but what may be taken referentially is but itself when apprehended as such. What is immediately apprehended has been referred to in many ways: Northrop (25) calls it "The differentiated aesthetic continuum;" James speaks of "the stream of consciousness;" Dewey calls it "experience." Now in this event-continuum symbols are only potentially present. Only that of it which is intentionally taken referentially functions symbolistically. Hence what may be a symbol in one instance may be in another instance—when immediately apprehended for itself — nothing more than itself.

On this view an art object, myth, musical composition, dance or any object or event is not inherently or intrinsically a symbol. Even mathematical and scientific objects *as such* are not symbols. This is especially so when, in the creative phases of mathematical activity and scientific research, the mathematical or scientific object momentarily signifies only itself and nothing else, when it is in a sense objectified or reified during the moment of insight. Only later are such objects discriminated as symbols and in significant relations with other objects and events. Similarly in the aesthetic experience of art objects it is immediate apprehension which is essential; to approach the art object with the instrumental, signal-like type of anticipation characteristic of daily living, to ask "what does it mean?" of the art object, is to prevent the meaning or "significant form" by seeking it outside the immediate experience of the artwork. This would seem also to be the major difficulty in understanding theoretical science and especially mathematics. To expect "1" to be "1 something" is necessary to such ends as making change or counting sheep, but it is preventive of conceiving other mathematical concepts such as "2"—much less the irrational numbers, fractions, and other mathematical functions. What is experienced and acted upon as an end is significant in itself and does not function as a sign, i. e., signal or symbol. What is experienced and acted upon as referential is significant beyond itself and functions as signalistic or symbolistic. Hence there are no objects or events which are intrinsically signals or symbols. Conversely, there are no objects or events which cannot be used as signals or symbols. When experienced for itself the object or event is self-referential, but when it is contiguous with or intentionally used to another purpose not included within itself it becomes a signal or a symbol. "Sign" is the generic term here, and "signal" and "symbol" refer to its species. Further elaboration of what is meant by signalistic and symbolistic processes is in order.

As differentiation of the sense and/or act phylogenetically and ontogenetically proceeds, what was earlier important as conditioned signal or instrumental act, becomes at least temporarily important in and of itself. Discriminated *sensa* as such are regarded here as "signals" only for their contingent values and relations. "Symbols," on the other hand, are whatever is intentionally used to another purpose not included within itself; whatever is used to signify something else. Contiguity, although likely is not essential in such processes. In the semiosical continuum from protosignalistic, signalistic-adjustive, signalistic-contextual, symbolistic, to symbolistic-integrative all end-experience or end-acts may be: (1) potentially signals for all metazoa including man, (2) potentially symbols for some humans, but (3)

not necessarily signals or symbols for whatever organism experiences or performs them. But just as shift in the dynamic balance between them naturally eventuates in the development of experience-activity from the more direct adaptive processes to signalistic processes so also do these latter give way to symbolistic processes as the dynamic balance between these two shifts. It is of the nature of experience-activity that its development be marked by increasing value of and hence by increased probability of the superordination of the later over earlier semiosical processes. As long as semiosical processes are dominated by adjustive functions their use depends upon accidental yet dependable contiguity. The use of semiosical processes in any given situation is "correct" to the degree that such usage leads to consequences facilitative of adjustive functions then dominant. Whenever semiosical processes are momentarily released from bondage to adjustive functions, whenever they occur as end-experiences or end-acts, the question of correctness does not apply. In such instances adjustive relations of the particular semiosical processes *can be assigned* according to the "wish," the other prevailing dynamic experience-activity patterns in which the organism is operating at the time. In the transition from signalistic to symbolistic processes the organism does not "discover" the significance of signs but "asserts" the sign vehicle as an end-experience or end-act. The organism can then use it as a means to other experience-activity which later can be recognized at the time as "irrelevant". (Maslow (21) distinguishes the signalistic and asserive experience-activity as "coping" and "expressive" respectively.) Such assertion and reuse is *possible* at any time but its occurrence is a matter of probability, not necessity.

The distinction just made is apparent in the situation where a person searches for the "correct" meaning of a word as compared with individual who attaches a name to some emergent insight. The former — except for obvious physical differences — is hardly distinguishable from the situation in which a domesticated animal obeys verbal signals and who likewise must "discover" by trial and error the "meaning" of the signal noise. Any other signal-vehicle could be substituted, as has been done in the case of traffic lights, alarm bells, etc. A horse, infant, or uncultured man may by selective discrimination learn to stop at sight of a red light because of contiguous danger. Such experience-activity need not be considered as anything more than signalistic. However, at a more complex, differentiated level a human could recognize red as such in the situation and, if so inclined, substitute some other color for the red with no immediate difference occurring in his adjustive processes. Such a substitution would of course disrupt the adjustment of the horse or infant. But the man *could* understand (in addition to relearning) that this was a change in symbolistic convention; and this constitutes the shift from signalistic to symbolistic experience activity. Phylogenetically this shift would seem to begin with man, but there is no reason why symbolistic processes should be regarded as human in an exclusive sense. It might be interesting to speculate about the bee "dance", bird "songs", the micturition patterns in male dogs, or primate "prostitution" as possible subhuman forerunners in the area of social interaction. The fact remains that symbolistic processes are predominantly human. Ontogenetically, the shift from signalistic to symbolistic processes might be considered as fairly well established in about the third year and at the start of the "latent" period in the more psychologically health, intelligent child. Delay or prevention of the

shift could occur to the degree that "biological" needs remained relatively unsatisfied as the result of poverty of resources or inefficient means (habits or technologies) of satiation.

A basic distinction between signal and symbol is thus made: a signal is usually a somewhat accidental (to the adaptivity of the organism) concomitant of fundamental experiences and acts. Signals become symbols primarily by intent of recognition of the relative meaninglessness of parts of the signal as such and the "deliberate" or arbitrary use of such parts as signifying something other than the immediate contiguous purposes of the original object or event. This shift from signal to symbol behavior is relatively infrequent. Most likely is the transfer of the whole syncretic experience or expression (act), with many of its instrumentally irrelevant values, as in the case of myth and ritual in the so-called "primitive" and in the child. Frequently determinant of what shall be taken as symbolic is availability and contiguity in the present syncretism and a pseudo or real isomorphic similarity of its experiential materials and action patterns to subsequent or prior objects or events. This is especially apparent in phallic symbolism and in some of the onomatopoeic and interjectional references in language.

A summary of the adaptive/semiosical* continuum as seen from the perspective of our four-dimensional analysis is presented in Figure 2. The protozoan level is marked by the relatively diffuse *adaptive* relation between organism and environment. The next level is characterized by the beginning of end-experiences and end-acts potentially signalistic in function, adaptive in themselves and enabling more efficient adjustment of the older simply adaptive O-E relations. Such relatively primitive adjustive relations we have termed *protosignalistic*; they are perhaps best described by the classical theory of the conditioned response, for protosignalistic processes are dominated by the environmental contiguity of stimuli. Only the most primitive type of experientially-based anticipation occurs at this level. The next level, the signalistic-adjustive, is marked by greater development of signalistic processes both in quantity and in quality. In addition to the other two types of processes discrimination and instrumental behavior are more signalistic, especially in the functioning of developing exteroceptive sense organs. On the fourth level are to be found (in addition to all that has gone before) more complex relations between signalistic processes themselves, signals and instrumentations in contexts, both signals and instrumental acts becoming qualitatively and quantitatively more numerous. Hence the name for this level, *signalistic-contextual*. It is at this level that a particular type of reasoning develops. (Maier (17) defines reasoning as the combination of isolated experiences.) It is reasoning, however, still dominated by the phylogenetically more adaptive modes; *integration* as such is still not apparent though existing potentially throughout the series. The *symbolistic* level contains all that went before plus the *intentional use* of signs, a definitive transition from environmental-contiguity-determined signal processes. On the last level, the *symbolistic-integrative*, continuity with the other levels is preserved but there emerges *intentional patterning* of symbols. Throughout continuity is maintained by progressive increase in quantity and quality of discriminative and organizational possibilities. The figure does not adequately-

* The term *semiosical* is the adjectival form of *semiosis* meaning "a sign-process" or "a process in which something is a sign to some organism." Cf. Morris (22), p. 353.

ly show the continuity of experience-activity in the phylogenetic and ontogenetic dynamic-structural evolution. Further, our classification has been deliberately psychological rather than physiological, our feeling being that the latter has been done in large part already by Maier and Schneirla (17) and Herrick (8). Finally, the classification which appears in Figure 2 is admittedly rough and suggestive, and we are fully aware of the need for more definitive work on this problem.

IV

To be able to shift from signal to symbol processes at all would seem to be peculiarly human; and this by virtue of a greater development in the form of more differentiated relations of experience and activity than is to be found in any other individual organism or species. Man's greater complexity, experientially and behaviorally, makes possible increasingly efficient satisfaction of earlier emerging or "traditional" needs. He can be thereby freed to view the world for itself and does so to a degree not hitherto adequately appreciated. This is the ultimate meaning of "objectivity"; objectivity is the symbolistic function in action. (Cf. Schrickel, 28.) Aestheticians probably more than any other single group have noted this capacity for "disinterested interestedness" or psychic distance" in which experiencing or doing goes on for its own sake. Momentarily but frequently for some men, and for all men at some time or another, the experienced object or event dominates all needs, including fear and anger. In these circumstances the individual is no longer a "victim" of the accidents of contiguously "given" signals; he uses the symbolistic out of context. What formerly seemed a given or outwardly imposed function of experience-action develops into a positive selective function. Meaning is no longer experienced and executed as inexorably given but is now regarded as something invested in the object or event by the individual.

It is only recently that man has become self-conscious to the extent that this potentiality is being seen in proportion to the rest of himself, as something to which he must adjust with appropriate perspective. "In the beginning was the word" and the word was at first thought to be God's. Only recently have we realized that the word is ours and that we have responsibilities regarding its use. Perhaps the best reminder of these responsibilities is the untrammelled abuse of the word by some advertisers, propagandists and "professional" writers, dramatists, artists and educators. In brief, the human is going through a symbolistic revolution which he is just now beginning to see will tax all his powers of adjustment.

Some humans, in creating and using symbols have denied their animal heritage have developed a symbolofideism which has in too many instances instigated suicide and genocide. By too precious and often fanatic insistence upon insights symbolistically achieved and maintained they have on various occasions excluded survival itself. The leaders in this race to destruction have been among those most acculturated—church, school, and state officials. To a lesser degree but with stultifying effects are the occurrences of these processes in the institutionalization of science (cf. Wiener, 32; Hartung, 7) — including psychology. Yet the free and conscious invention and use of symbols is the uniquely human condition which will probably make the difference between cosmic ignominy or ever richer

Adaptive Semiosical continuum	Stage or level	General description of experience-activity	Phylogenetic and /Or ontogenetic level	Four-dimensional analysis			Synthesis of all four dimensions as process of evolution ary change
Adaptive	Adaptive	Relatively un-differentiated, diffuse, direct, labile	Protozoa to man, all tissue, fertil-ized ovum	Aesthetic	Formal	Dynamic	Historical-temporal
	Protosignalistic	Fragmentarily differentiated, kaleidoscopic, crudely organized	All metazoa, some tissue, embryo				Evolution from crudely historical experience-activity which is anticipatory or primarily determined genetically, through time perception, to the atemporal or predictive in the sophisticated, probabilistic rather than in the wishful sense.
Adjustive	Signalistic-adjustive	Some discrimina-tive instrumental signal-obained habits	Some metazoa including all primates, foetus through neonate	Historical-temporal	Historical-temporal	Historical-temporal	Above modified by Pavlovian condition-ing-contiguity dominated
		Disorientative-instrumental; more dominated by relatively systematically organized habits	Some mammals, all men at some time, 'latent' period in men				Above modified by discriminative-instrumental learning
Adaptive processes dominate and/or utilize signal processes	Signalistic-contextual	Creatively imagina-tive; some science art, religion, philosophy, institutions	All men through "phallic" stage	Progressive differentiation of experience-activity into more discrete, fixed, qualities and acts, with increasing "psychical" distance.	Progressive reorganization and elaboration of experience-activity from relatively unstructured, contiguity-dominated patterns to highly systematized relations with decreasing semantic reference.	Progressive complication of motivation, affectivity, and emotions from crudely motive-separated acts and experiences taken as multivalued, through increasingly elaborated hierarchical value systems to "mathematically" valued experience-activity marked by identity of symbolistically expressed values.	All above modified by reasoning (com-bination of isolated experience and or acts)
	Symbolistic	Disinterested interestness in experiences and acts—in or out of relation	Some men in "genital" stage				All above modified by occasional inte-grations used instrumentally to other ends
signal processes become interesting momentarily dominant, and eventually symbolic	Symbolistic-integrative			Evolution from crudely historical experience-activity which is anticipatory or primarily determined genetically, through time perception, to the atemporal or predictive in the sophisticated, probabilistic rather than in the wishful sense.			All above with oc-casional integrations used or accepted as such
Adaptive semiosical continuum	Any stage, level or form			Dynamic-Structural evolution			

Figure 1

Figure 1

forms of experience and activity.

The peculiarly human use of symbols as such which occurs in logic and mathematics warrants comment at this point. Mowrer and Kluckhohn (24) have termed such activity *integration* (in contrast with *adaptation* and *adjustment*). Earlier and inadequate characterizations of these processes is to be found in Plato's account of *dialectics* and in Aristotle's description of the functions of the *rational soul*. In a sense this is the human's least meaningful attribute; for it enables him to pretend to a machine-like elegance as uninspiring as the computers and "electric brains" recently contrived are inspiring. From our previous analysis it is evident that semiosical processes emerge out of, yet remain related to, deeper and more reinforcing levels of existence. Such processes also become more important in and of themselves as they relate more and more to each other. The values or motives which emerge are intrinsic to this direct relatedness of signs to each other, taken in themselves. These relationships would be severely limited in significance regarding traditional patterns of motivation yet on occasion could in principle exclude the latter entirely. Hence a relatively "meaningless" set of processes could become established or at least occur relatively autonomous of the more basic sign sensations themselves. Something like this occasionally occurs in mathematics and logic where elaboration of organizational, syntactical, or formal aspects is at the expense of semantic clarity. It has long been observed that decrease in extension of terms is concomitant with increase of their intension. Such processes enable a very precise and "exact" form of thinking, but at the expense of thinking "about something". Integration achieved through symbolization processes in humans reaches the highest levels of consistency and coherence, but integration does not necessarily carry with it its own efficaciousness. Yet when men integrate such processes with immediate apprehension or "empirical observation" in a way that permits a consciously systematic, mutually modifying set of relations to maintain between the two, and when recognize and give value to the dynamic aspect of all experience ("animal included), a level of understanding is achieved nowhere duplicable in the realm of living beings.

SUMMARY

We have suggested that the symbolistic revolution which constitutes at least one of the basic features of man's humanity is a complex of events occurring in his phylogenetic and ontogenetic evolution. This revolution within evolution we have analyzed in terms of a four dimensional conceptual scheme which was applied to the eventcontinuum of experience-activity. The dimensions were conceived as: (1) the aesthetic or substantive; (2) the formal or organizational; (3) the valuative or economic; and (4) the historical-temporal. Our analysis showed: (1) that as specialization developed within the first dimension there occurred increasing number of distinguishable attachments between organism and environment (e. g. from light to particular colors); (2) that as possibility of relationships in the formal dimension increased in number and complexity superficial sensa could become more distantly related to that which needed immediate signification in more syncretic situations — also this possibility of more numerous and more complex relationships in the formal dimension provided opportunities for more direct relations between the formal elements themselves; (3) that these newer signs increased in relative and absolute importance over the "traditional" or "biological" drives and emerged as values in their own right; (4) that these signs enabled a greater psychical distance between organism and environment thus permitting in the temporal dimension a greater capacity for anticipation and predication of probable consequences of experience-activity. This four dimensional scheme was then directed toward the problem of the origin of signalistic and symbolistic processes. Throughout it was maintained that the

phylogenetic and ontogenetic evolution of adaptation-adjustment-integration is functionally related to the simultaneous development of semiosical processes from endexperiences and end-acts. The shift from signalistic experience and activity was characterized as the change from dependency upon the accidental contiguity of signalistic processes and the historical consequences which they signify to assertion of the independent value of signs and their possible reemployment as symbols as a matter of convenience.

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