BEHAVIOR THERAPY (1971) 2, 307–320

Phobias and Preparedness[1]

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Some inadequacies of the classical conditioning analysis of phobias are discussed: phobias are highly resistant to extinction, whereas laboratory fear conditioning, unlike avoidance conditioning, extinguishes rapidly; phobias comprise a nonarbitrary and limited set of objects, whereas fear conditioning is thought to occur to an unlimited range of conditioned stimuli. Furthermore, phobias, unlike laboratory fear conditioning, are often acquired in one trial and seem quite resistant to change by "cognitive" means. An analysis of phobias using a more contemporary model of fear conditioning is proposed. In this view, phobias are seen as instances of highly "prepared" learning (Seligman, 1970). Such prepared learning is selective, highly resistant to extinction, probably noncognitive and can be acquired in one trial. A reconstruction of the notion of symbolism is suggested.

Behavior therapists have proposed a plausible learning alternative to the psychoanalytic view of phobias. This paper examines some inadequacies of the learning model and suggests a way of accounting for phobias which combines the biological and learning points of view. Ironically, what emerges somewhat resembles the psychoanalytic view, and it may help to reconstruct notions like symbolism.

Wolpe and Rachman (1961) have clearly stated the case for a learning theory interpretation of phobias. They examined Freud's classic "Little Hans" case (1909), and proposed an alternative approach. To refresh the reader's memory, Little Hans was a 5-year old boy who developed a horse phobia. Freud interpreted the fear of horses as an outcome of the Oedipal conflict; Hans desired his mother sexually, wished his father out of the way, and, fearing his father's retribution (castration), displaced the fear onto horses. Wolpe and Rachman effectively criticized Freud's use of evidence, taking him to task for focussing only on material from Hans which confirmed the interpretation while disregarding his explicit rejections of the interpretation. Wolpe and Rachman's exposé of the looseness of psychoanalytic argument and evidence is perhaps as clearheaded a critique of analytic inference as exists in the literature.

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They also outlined a learning theory view of little Han's phobia. What little Hans was afraid of, in their view, was not his father, but horses. To quote their interpretation:

> In brief, phobias are regarded as conditioned anxiety (fear) reactions. *Any* "neutral" stimulus, simple or complex, that happens to make an impact on an individual at about the time that a fear reaction is evoked, acquires the ability to evoke fear subsequently. If the fear at the original conditioning situation is of high intensity or if the conditioning is many times repeated, the conditioned fear will show the persistence that is characteristic of *neurotic* fear; and there will be generalization of fear reactions to stimuli resembling the conditioned stimulus.
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> Hans, we are told, was a sensitive child who "was never unmoved if someone wept in his presence" and long before the phobia developed became "uneasy on seeing horses in the merry-go-round being beaten" (p. 254). It is our contention that the incident to which Freud refers as merely the exciting cause of Han's phobia was in fact the cause of the entire disorder. Hans actually says, "No. I only got it (the phobia) then. When the horse in the bus fell down, it gave me such a fright, really! That was when I got the nonsense" (p. 192). The father says, "All of this was confirmed by my wife, as well as the fact that the anxiety broke out immediately afterwards" (p. 193).

Horses became phobic via Hans via classical conditioning because he saw horses at the same time as being frightened. Such a view has much *prima facie* plausibility. The conditioning of fear has been demonstrated repeatedly in the laboratory both in humans and animals. Watson and Rayner (1919) paired a startling noise with a white rat to "Little Albert," and Albert became afraid of rats, rabbits, and other furry objects. The classical conditioning of fear was subsequently brought into the animal laboratory by Estes and Skinner (1941), and the literature on it is now truly voluminous (e.g., Campbell & Church, 1969; Brush, 1971).

Further impetus for a learning interpretation of the cause of phobias comes from the dramatic success which behavior therapists have had in breaking up phobias using learning techniques (e.g., Wolpe & Lazarus, 1969). Phobias can be "extinguished" by counterconditioning relaxation to representations of phobic stimulus. If phobias can be extinguished by techniques developed in the learning laboratory, this suggests, but by no means proves, that they were originally acquired by such learning.

There are some salient problems with the learning interpretation of phobias which seem related to inadequacies of theories of learning themselves. These difficulties also crop up in learning accounts of other forms of human psychopathology, but we shall discuss only phobias here.

The first problem is that phobias do not extinguish under conventional procedures which reliably extinguish classically conditioned fear in the laboratory. When an individual with a cat phobia imagines a cat or comes across a cat, he is exposed to an extinction *procedure*. By the learning account, the cat (CS) was once paired with some fear evoking trauma, unconditioned stimulus (UCS), and as a consequence the cat became an elicitor of fear. *When the cat is presented without the original UCS, the association should diminish.* But it is commonplace that exposure to the phobic stimulus or brooding about the phobic object does not diminish fear and may even enhance it. It will not do to say that the cat itself became a UCS, because this is merely a restatement of the problem. Why should cats become UCS's when paired with trauma, and not tones which are paired with shock in the laboratory?

There is a common misconception among clinicians about the extinction of conditioned fear in the laboratory, and it is worthwhile examining the evidence at some length. The misconception arises from a careless interpretation of the avoidance learning literature, a leap from the fact that avoidance responding does not extinguish to the mistaken inference that conditioned fear does not extinguish.

In a typical laboratory avoidance procedure, an animal is exposed to the following contingencies: (1) some CS such as a tone is paired with strong electric shock (UCS). Such pairing causes the classical conditioning of fear to the tone. (2) If the animal responds, e.g., by running to the other side of the shuttle box after the shock comes on, both the shock and the tone terminate. This instrumental escape response is reinforced by the termination of the painful shock, possibly by the termination of the fear-evoking CS and also by the nonoccurrence of shock. Which of these reinforcements is more effective is in dispute (e.g., Rescorla & Solomon, 1967; Herrnstein, 1969; Bolles, 1970), but is irrelevant for the present discussion. It is well documented that, once an animal begins avoiding reliably, if the shock is now disconnected (a so-called extinction procedure) the animal will continue to respond, not infrequently outlasting the experimenter's patience (e.g., Solomon, Kamin, & Wynne, 1953; Seligman & Campbell, 1965). What many have inferred from this, however, is that fear once learned does not extinguish. But it does not follow from failure of avoidance to extinguish that classical conditioning of fear does not extinguish. Notice that, as the contingencies are arranged, if the animal avoids on every trial (i.e., responds to the tone and terminates it before the shock would have appeared) it is not exposed to the fact that the tone no longer predicts shock. That is to say: an extinction of avoidance procedure does not necessarily entail an extinction of classically conditioned fear procedure. It turns out that, if the avoidance response is prevented, thus forcibly exposing the animal to the fact that tone is no longer followed by shock, avoidance readily extinguishes (for an extensive review, see Baum, 1970). Avoidance extinguishes after blocking because fear is extinguished, since the subject is exposed to the CS, no longer predicting the UCS. Avoidance fails to extinguish before blocking because the response is continually reinforced by shock prevention and by CS termination. The animal has no way of "finding out" that shock would not have occurred if he had not responded. If the animal continues to respond every time, disconnecting the shock is the experimenter's secret. Moreover, if an instrumental avoidance paradigm is not used, so that fear is conditioned without an instrumental contingency, the fear extinguishes to the CS. This is true of both behavioral indexes of fear (e.g., Wagner, Siegel, & Fein, 1967) as well as physiological (e.g., Black, Carlson, & Solomon, 1962). In fact, this is such common knowledge among people working in these fields that not much systematic study of it has been published, rather it is assumed in their procedures. For example, after fear has been classically conditioned, the effects of the CS are commonly tested only for the first few trials of extinction. After that, the CS soon becomes impotent (e.g., Rescorla & LoLordo, 1967; Kamin, 1965).

Although the weight of evidence indicates extinction of conditioned fear, sophisticated readers may be aware of the paradoxical "Napalkov" (1963) effect (see also Eysenck, 1968). It is observed that, occasionally fear is actually enhanced during presentation of the CS unreinforced by shock (Rohrbaugh & Riccio, 1970). There seems to be no ready explanation for the conditions under which this relatively rare phenomenon occurs; but it will hardly do as a refuge for those who want to hold that it explains the failure of phobias to extinguish. First, because the most common observation is monotonically decreasing fear in extinction, and second, because extinction probably sets in after a few trials of paradoxical enhancement (Rohrbaugh & Riccio, 1970).

There is one way out and that is to claim that phobias involve avoidance and so do not extinguish because they are analogous to laboratory avoidance (Eysenck & Rachman, 1965). So, e.g., when Freud's notorious Little Hans thinks of horses, he also performs some avoidance response which he believes prevents the real UCS, and he never finds out that horses are no longer paired with the unconditionally frightening event. By avoiding, he never exposes himself to the fact that the CS is no longer paired with the UCS and the CR remains. This way out is unpalatable because it postulates on unobservable avoidance response in the absence of independent evidence for such a process. Incidentally, this avoidance formulation should not be confused with a very real avoidance component in phobias: that people go to great length to avoid the phobic object—but this is an example of avoiding the CS, not of being exposed to the CS and avoiding the UCS. For example, a woman afraid of heights will actively avoid getting herself into a situation in which she is very far off the ground. In such a case, fear of heights should remain, since she cannot be exposed to heights no longer paired with the original UCS. Our concern is not with cases in which the person successfully avoids any exposure to the CS and, therefore, avoids exposure to the extinction contingency, but rather with those individuals who are exposed to the CS when it is no longer paired with UCS. The problem we are tackling is that phobics actually exposed to the CS do not extinguish, and avoidance of the CS is irrelevant to this problem. For example, a spider phobic individual will think about spiders, see pictures of spiders, and even actually see spiders. All of these situations consitute exposure to the CS (more or less) no longer paired with the original UCS. Yet it is commonplace that such inadvertant exposures rarely weaken, and may even strengthen, the phobia.

Before leaving the difference in extinguishability of phobias and laboratory conditioned fear, we should mention another difference. Implicit in the general process learning view of phobias is the assumption that they can be learned in one trial: It must be enough for one traumatic experience paired with a CS to produce a phobia. One-trial conditioning of fear is the exception, not the rule, in laboratory fear conditioning. The conditioning of fear commonly takes between three and six trials (e.g., Kamin, 1969; Seligman, 1968). If extremely traumatic UCSs are used, such as fear of imminent death (Campbell, Sanderson, & Laverty, 1964), one-trial conditioning can be obtained. But let us keep in mind that fear conditioning in the laboratory is only rarely full-blown in one trial, but for phobias it should be commonplace.

In summary, one difficulty for the behavior therapy view of phobias is that they are hard to extinguish, while the alleged laboratory model of classically conditioned fear extinguishes readily. A homier way of making the same point is to say that phobias are irrational. Telling a phobic, however persuasively, that cats (CS) won't do him any harm, or showing him that the UCS doesn't occur when cats are around is rarely effective. Showing an animal that the CS no longer predicts the UCS usually results in extinction (Black, 1959). The "laws" of fear conditioning (Rescorla & Solomon, 1967) look very much like expectations: CSs that are paired with shock become fearful and stop being fearful when they predict no shock. Conditioned and differential inhibitors, CSs that predict the absence of shock, become active inhibitors of fear (Rescorla, 1970). Very long CSs which end in shock inhibit fear at their outset and evoke fear at their termination (Rescorla, 1968; Seligman & Meyer, 1970). We shall later try to account for the noncognitive nature of phobias, their inextinguishability, and their one-trial acquisition.

Before doing so, let us look at another neglected property of phobias which is difficult to model by ordinary classical conditioning of fear. According to Pavlov's view of conditioning, the choice of CS is a matter of indifference. "Any natural phenomenon chosen at will may be converted into a conditioned stimulus . . . any visual stimulus, any desired sound, any odor and the stimulation of any part of the skin" (Pavlov, 1928, p. 86). This is the heart of the general process view of learning and, by this widely held view, any CS which happens to be associated with trauma should become phobic. But a neglected fact about phobias is that, by and large, they comprise a relatively nonarbitrary and limited set of objects: agoraphobia, fear of specific animals, insect phobias, fear of heights, and fear of the dark, etc. All these are relatively common phobias. And only rarely, if ever, do we have pajama phobias, grass phobias, electric-outlet phobias, hammer phobias, even though these things are likely to be associated with trauma in our world. The set of potentially phobic events may be nonarbitrary: events related to the survival of the human species through the long course of evolution (see Marks, 1970, pp. 63–68, for a clearheaded discussion of the nonarbitrariness of phobic stimuli).

What is it about phobias that makes them (1) selective, (2) so resistant to extinction, (3) irrational, and (4) capable of being learned in one trial? *Phobias are highly prepared to be learned by humans, and, like other highly prepared relationships, they are selective and resistant to extinction, learned even with degraded input, and probably are noncognitive.* Phobias may be instances of classically conditioned fear, but not unprepared conditioned fear such as a tone paired with shock. Rather, they are instances of prepared conditioning of fear. So phobias can indeed be modelled by a "simple learning process," but one needs to modify general process learning theory to do it. The modification, argued at length elsewhere (Seligman, 1970; Seligman & Hager, in press, may be summarized as follows:

Since the time of Pavlov and Thorndike, the laws of learning have been formulated using arbitrary sets of events, such as a click paired with meat powder for dogs, and the pressing of levers for flour pellets in rats. At the base of such endeavors is the premise that the laws found would be general from one set of events to another. Arbitrarily chosen relationships were at a premium, since the laws that emerged should be uncontaminated by the idiosyncratic past experience that the animal brings to the situation or by the biological characteristics of his particular species. However, one danger in such a strategy is that the laws so found would be peculiar to arbitrary events arbitrarily concatenated. This danger is particularly acute when one realizes that animals and humans do a great deal of learning about contingencies which their species has faced for eons. Not only do birds learn to turn wheels for grain, which their ancestors never did, but they also *learn* to migrate away from the North Star in the fall (Emlen, 1970b), a contingency their ancestors faced before them. Not only do humans learn to fear crossing busy streets, but also to fear the dark. All this learning may not be the same.

A dimension of preparedness has been operationally defined:

> "confront an organism with a CS paired with UCS or with a response which produces an outcome. Depending on the specifics, the organism can be either prepared, unprepared, or contraprepared for learning about the events. The relative preparedness of an organism for learning about a situation is defined by the amount of input (e.g., numbers of trials, pairings, bits of information, etc.) which must occur before that output (responses, acts, repertoire, etc.), which is construed as evidence of acquisition, reliably occurs. It does not matter how input or output are specified, as long as that specification can be used consistently for all points on the continuum. Thus, using the preparedness dimension is independent of whether one happens to be an S-R theorist, a cognitive theorist, an information processing theorist, an ethologist, or what have you. Let us illustrate how one can place an experimental situation at various points on the continuum for classical conditioning. If the organism makes the indicated response consistently from the very first presentation of the CS on, such "learning" represents a clear case of instinctive responding, the extreme of the prepared end of the dimension. If the organism make the response consistently after only a few pairings, it is somewhat prepared. If the response emerges only after many pairings, the organism is unprepared. If acquisition occurs only after very many pairings or does not occur at all, the organism is said to be contraprepared. The number of pairings is the measure that makes the dimension a continuum, and implicit in this dimension is the notion that "learning" and "instinct" are continuous. Typically ethologists have studied situations from the prepared side of the dimension, while general process learning theorists have largely restricted themselves to the unprepared region. The contraprepared part of the dimension has been largely uninvestigated, or at least unpublished" (Seligman, p. 408, 1970).

By now, it has been well documented that some contingencies are learned about much more readily than others. In virtually every major paradigm that learning theorists have used, some contingencies are learned with highly degraded input (one trial, long delay of reinforcement) while others are learned only painstakingly. A few examples follow.

Many readers have probably acquired some taste aversion after being sick to their stomachs. Garcia and associates (for review, see Garcia, McGowan, & Green, 1971) have found that this is a prepared form of classical conditioning. Rats learn to associate tastes, rather than external cues like lights, with nausea, and they can learn this in one trial even with a several hour delay between the taste and the illness. Pairing a light with foot shock, on the other hand, takes several trials to acquire and can bridge a delay of only a few seconds. Note that this prepared learning reflects a real contingency which rodents have faced through the course of evolution: tastes are paired with poisoning, and the effects of poisons do not usually begin immediately. Such prepared learning gives a selective advantage.

In the realm of instrumental learning, Brown and Jenkins (1968) showed that pigeons learn to peck a lighted key which is paired with grain, even though pecking the key has no effect on grain. Yet rats learn only by trial and error to press a bar for food and only if bar pressing produces food. In avoidance learning, birds have a great deal of trouble learning to peck a key to prevent shock, but can learn to hop up (Emlen, 1970a) or fly away (Bedford & Anger, 1967) to avoid shock. Rats have trouble learning to bar press to avoid, but learn to jump up to avoid in one trial (Baum, 1966). In discrimination learning, dogs learn readily to go to the left rather than to the right, if the cues which tell them which way to go are in different places, but can't learn if the cues differ in quality, rather than place. Conversely they can learn to put their paw up or keep it down if the cues differ in quality, but not if they differ in location (Dobrzecka, Szwejkowska, & Konorski, 1966). Seligman (1970) and Seligman and Hager (in press) discuss many other examples of prepared, unprepared, and contraprepared learning. The upshot of these examples is that learning itself may be quite different depending on how prepared the organism is for the particular contingency he confronts.

We can now return to phobias: The difficulty that learning theory has in modelling phobias by the classical conditioning of fear does not result from phobias' being phenomena *sui generis*, but, rather, results because the conditioning used as a model was unprepared rather than prepared conditioning. Prepared learning provides a better fit with phobias than unprepared learning because we have reason to believe that it (1) can be acquired in one trial, (2) is selective, (3) is resistant to extinction, and (4) may be noncognitive. Let us now look at the evidence that leads in this direction.

In the first place, prepared classical conditioning by definition occurs in one or a very few trials. It is defined as conditioning that occurs with minimal or even degraded input. Like phobias, the contingencies around which prepared learning revolves are not arbitrary, but rather those that may have been intimately involved in the survival of the species. Prepared learning is highly selective: When a rat becomes ill, taste aversion develops but not aversions to the sounds and sights that were also contiguous with illness. When grain is presented, pigeons peck at lighted keys, but do not step on treadles or turn wheels. When chaffinches develop, they learn the song of their species, and ignore the similar songs of other species (Marler, 1970). Reevaluate Watson's classical experiment with Little Albert. Furry things, like rats and rabbits, became aversive to Little Albert, but Watson and Rayner themselves probably did not. Maybe this experiment really is a more adequate model of human phobias than fear conditioning in the rat. Conditioning occurred in two trials, making it operationally prepared and it was also selective. Bregman (1934), probably aware of the difficulty of making children afraid of scissors and electric outlets, repeated the Little Albert experiment using common household CS like curtains and blocks instead of furry things. She got no fear conditioning at all. Furthermore, English (1929) did not get fear conditioning to a wooden duck, even after many pairings with a startling noise.

Aside from being selective, Watson and Rayner's prepared fear conditioning does not extinguish readily. Special procedures, such as counterconditioning (Jones, 1924) are necessary to produce remission of fear. It seems likely that prepared learning like phobic learning is highly resistant to extinction. Garcia's taste aversions are somewhat persistant, even though the animal must drink the fluid to survive. Rozin's (1967) taste aversions persisted even after his rats were restored to health. Wild rats, who become poisoned on a new taste, will often starve to death before eating other new flavors (Rzoska, 1953). Human taste aversions are also resistant to change—they may dissipate in time, rather than with trials of unreinforced exposure. Other forms of prepared learning, unlike unprepared learning, are highly resistant to extinction. Williams and Williams (1969) made the "auto-shaped" key pecking of pigeons counterproductive—pecking the lighted key was no longer independent of grain presentation, it actually *prevented* grain. The pigeons pecked anyway. Stimbert (1970) trained rats to make the correct choice in a maze either using another rat as the cue or with masking tape, over the course the cue rat had traversed as the cue. The "rat" cue was learned readily (prepared), whereas the masking tape cue was learned painstakingly (unprepared). The cue rat did not lose his cuing ability even after 150 trials in which food was no longer presented, but the masking tape cue extinguished in 20 trials. Seligman, Ives, Ames, and Mineka (1970) conditioned drinking in rats by pairing a compound CS with thirst-inducing NaCl–procaine. When mild thirst was part of the CS, conditioning did not extinguish; but if mild thirst were not part of the CS, conditioning occurred and extinguished rapidly.

Thus, if phobias are seen as prepared classical conditioning, their one-trial acquisition, their selectivity and their persistence may follow. The "irrationality" of phobias is also compatible with what data exists on prepared classical conditioning. Seligman (1970) suggested that unprepared contingencies are learned and extinguish cognitively, i.e., by such mechanisms as expectations, intentions, beliefs, or attention, while unprepared associations are learned more primitively or noncognitively. Prepared associations may be the blind associations that Pavlov and Thorndike had thought they were studying, whereas they wound up working on the laws of unprepared learning or expectancies.

The noncognitive nature of prepared associations is illustrated by at least one observation: Knowing that the stomach flu and not the sauce Bearnaise caused the vomiting does not inhibit the aversion to the sauce. In addition, there are several experiments which suggest that, unlike unprepared conditioning, prepared conditioning is not readily modified by information. When unprepared CSs such as tones are paired with shock, information plays a large role in learning. Kamin (1969) has demonstrated that, when tone is paired with shock and then both tone and light are paired with shock, no fear conditioning occurs to the light. Prior conditioning with tone "blocks" the rat's learning that the redundant light also predicts shock. Kalat and Rozin (in press) repeated the blocking study with the more prepared contingency of taste and illness. The redundant CS was *not* blocked in their studies, indicating that taste-nausea conditioning may be primitive and noncognitive. Garcia, Kovner, and Green (1970) reported a related finding. Rats learned to avoid shock with taste as the discriminative stimulus in a shuttle box. When tested in the home cage, no aversion to taste was found. When the rats had the taste as a stimulus for illness, however, aversion was total even in the home cage. In the taste-shock contingency, taste merely becomes a *cue* for shock in the shuttlebox. But when taste predicts illness, the taste aversion is full-blown even though the rat is in a different place. The taste may actually take on some qualities of the illness. Finally, Roll and Smith (in press) demonstrated that taste aversion could occur even when the rat was anesthetized, and Nachman (1970) reported that electroconvulsive shock, which eliminates fear conditioning, did not eliminate the memory of taste aversion.

Human phobias are similar. Showing or telling a phobic that cats are not going to hurt him is rarely effective. *Phobic* fear is by definition not readily inhibited by rational means. Rather, one needs to resort to special procedures, such as the counterconditioning employed in systematic desensitization. We do not yet know much about how to get rid of prepared associations like taste-illness, imprinting, and auto-shaping, although we know that mere extinction is not very effective. Might counterconditioning be an effective procedure in these cases? At any rate, we may now be in the position to develop a fruitful animal model of phobias, and discover how best to produce extinction; for we can do fear conditioning not with a tone or light, as is usual, but with more natural CSs such as the picture and sound of snakes or hawks paired with shock for a rat. It would not be surprising to find one trial fear conditioning and great resistance to extinction. Such experiments would allow us to explore the ways of getting rid of fear, and might suggest new therapeutic techniques with phobias.

There is one subtlety to the form of the argument which should be underlined. It is not argued that no phobia about objects of modern technology exists, or that all phobias are noncognitive. People sometimes talk themselves into phobias. There are airplane phobias and fears of electric shock. The preparedness view is not disconfirmed by isolated examples: it points to the fact that the great majority of phobias are about objects of natural importance to the survival of the species. It does not deny that other phobias are possible, it only claims that they should be less frequent, since they are less prepared.

In some ways, we have come full circle. We began by concurring in the rejection of the psychoanalytic interpretation of phobias, e.g., that horses were fearful to Little Hans because they symbolized his father's retribution. We modified the learning reconstruction of phobias by suggesting a modification of general process learning theory. Phobias, in our view, are not instances of unprepared fear conditioning, but of prepared fear conditioning. Nonarbitrary stimuli seem particularly ready to become phobic objects for human beings and this may also be true of "soteria," the opposite number from phobias (e.g., Linus' blanket). Particular CSs are readily conditioned to particular UCSs. Perhaps this is a way of reconstructing symbolism. Is it possible that there really is something to horses and wolves, etc., that makes them highly associable with certain kinds of traumas, perhaps even sexual ones? Does anyone have a lamb phobia? This is testable. When Little Hans acquired his phobia, there were not only horses around, but other things, such as his nurse or a bus and yet these did not become phobic objects. Why only horses? If children were given horses and blackboards, both paired with anxiety-arousal, would they learn readily to be afraid of horses but not of blackboards?

So, for a biologically oriented learning theorist, to what can the notion of symbolism amount? A is symbolic of B, if and only if human beings are prepared, in the sense defined, to learn that A is associated with B. If humans can acquire with A the properties of B after only minimal input, then it is meaningful to say that A is symbolic of B.

Even more speculatively, does preparedness range beyond simple symbolic associations? Are there ways of thinking in which humans are particularly prepared to engage, as Lenneberg (1967) has argued for language and cognition? If association, causal inference, and forms of cognition are prepared, are there stories that man is prepared to formulate and accept? If so, a meaningful version of the racial unconscious lurks close behind.

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