

# Extinction phenomena: a biologic perspective on how and why psychoanalysis works

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## Introduction

Increasingly over the past decade, psychoanalysts have shown a willingness to believe that various aspects of psychoanalytic technique, heretofore viewed as important if not essential, can be altered or actually even dispensed with entirely without substantially compromising treatment effects. This new flexibility is due to a variety of reasons. For example, as a consequence of strained economic circumstances, modern day busy schedules, and competition both from pharmacological treatments and cognitive behavioral therapies (CBT) requiring less time input, the frequency of sessions per week in the typical psychoanalysis has gone down. This is so clearly the trend that even some training institutions permit thrice weekly analyses to “count” both for the psychoanalyses that candidates conduct and for their own required treatments (their so-called “training analyses”). Although most view this as less than ideal, patients, and analysts have coped with the consequent decrease in intensity.

Another recent change is that psychoanalyses (or portions thereof) now sometimes take place largely by telephone or over the Internet with Skype software enabling visual contact to accompany auditory communication. The increased mobility of analysands (often necessitated by their careers), and major technological advances contribute to this change; and it is too early to evaluate its effects [1](#).

Related to this last alteration in psychoanalytic technique, but far pre-dating it, are questions about the use of the psychoanalytic couch [2](#). Never really deemed “essential” to psychoanalytic treatments – many analysts (myself

included) have followed Freud in feeling that it is a burden to be looked at all day – analysts have considered the couch to be useful in allowing both patients and analyst to associate more freely. Certainly without the social conventions and regulators of everyday conversations (including eye contact and nodding), when patients are on the couch, both patients and analysts experience far fewer constraints. And yet (as will be discussed below) in the analytic treatment of children, adolescents, and even some adults, the couch has been regarded by some as optional at best, and even detrimental. This last position seems to have gained some strength as anecdotal reports of patients feeling alienated on the couch grow, while the frequency of sessions per week diminish, each session providing an opportunity for human contact.

Paradoxically, despite these recent trends, I want to make an argument on a biological basis favoring aspects of classical psychoanalytic technique, and in particular the couch, as essential in effecting changes in psychopathology. Further I want to propose that psychoanalysis, with the biologically potent classical techniques in place, can produce changes over and above those that rival treatments can deliver. Note here that I am not holding the particular features of classical analytic techniques that I will discuss as definitionally essential; no one of these features alone, nor any combination thereof, is constitutive of psychoanalysis. Rather I claim that frequency, physical presence of patient and analyst, and especially the couch are essential for patients' capacity to establish varied and deeply experienced transferences, and that these in turn are necessary for the lasting biologically mediated improvements in psychopathology psychoanalysis can uniquely offer.

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Now my view does actually imply that treatments (including CBT, various psychotherapies, and even non-classical psychoanalyses) to the extent that they rely solely on changes affected through higher-level psychological processes cannot be as effective as classical psychoanalysis. Why? Because these treatments are predicated only on distinctly human learning systems involving rationality based learning and autobiographical memory system rather than allowing the simultaneous functioning of diverse unconscious (irrational and a-rational) transferences constituting the biological underpinnings that I will begin to describe just below [3](#).

The biological model upon which I draw to make these claims does not involve brain chemistry nor neuroanatomy (at least not primarily). Rather, it is to the biology of conditioning, specifically that of conditioned fear responses, and extinction learning, to which I turn in order to make the case. The argument will take shape as follows. In the section just below I describe the basic concepts of conditioning, including fear conditioning. Then in the section to follow I suggest that various sorts of psychopathologies in fact result (at least in part) from complex conditioning. Continuing my account, the next section provides an outline of recent developments in the understanding of extinction phenomena. Finally, in the last section I propose that psychoanalyses, particularly those using classic psychoanalytic techniques, can better provide the procedures (or analogs thereof) currently thought to be necessary to best approximate successful extinction. In this final section I will make the claim that in understanding the processes of conditioned learning and extinction one can have a new biological perspective on explaining how and why psychoanalysis can (and does) work.

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## Conditioning Paradigms

Conditioning, both in its classical Pavlovian form, and of the instrumental or operant type, is a robust and widespread biological phenomenon.

Functioning in living organisms ranging from those that are quite simple (e. g., the sea slug, *aplysia*; see Walters et al., 1979) [4](#) to the very complicated (e. g., human beings), conditioning is perhaps the most basic form of learning. Both types of conditioning essentially involve associative learning.

The basic paradigm for classical conditioning can be readily seen in Pavlov's (1927) famous work with dogs. A hungry dog salivates when food is presented. The food, an unconditioned stimulus (US), will bring about salivating, the biological unconditioned response (UR), quite spontaneously. Now add trials in which a ringing bell just precedes the presentation of food. The bell is a conditioned stimulus (CS) paired with the food. After some number of trials, the mere ringing of the bell (CS) will occasion the dog to salivate, i. e., to have the conditioned response (CR), before or even in the absence of food. The bell (the CS) has become associated with the food (the US) such that salivation (CR) results.

“ Operant conditioning,” according to conditioning researchers [Bouton and Swartzentruber\(1991\)](#), p. 124) “ is a similar process through which organisms learn to associate new behaviors or acts with reinforcers.” In operant conditioning (also called instrumental learning) an animal's behavior is shaped, not by antecedent stimuli as in classical conditioning, but instead by the reinforcers (rewarding or punishing in nature) that are experienced as consequences of the behavioral acts. ( [Bouton and Swartzentruber, 1991](#), p.

129; [Skinner, 1938](#).) Training a dog, for example, involves much instrumental conditioning. Take the basic command “ sit.” When teaching a puppy to sit, the owner positively reinforces as many instances of sitting as possible, at first whenever the puppy sits for whatever puppy reason, and later only after the oral command, “ sit.” Pigeons likewise demonstrate instrumental conditioning when differential reinforcement leads to differential pecking behaviors. For example, a pigeon will learn to peck the middle key in a series of keys far more than any of the others, if pecking the middle key has been followed more often by food reward. Similarly, rats can be trained to differentially explore particular areas of their environments based on operant conditioning. They will engage in far more lively exploratory behavior of any portion of the cage in which some sort of positive reinforcement has taken place, spending far more time in that area over non-reinforced areas.

Regarding operant versus classical conditioning, [Bouton and Swartzentruber\(1991](#), p. 129) point out that despite decades of textbooks emphasizing the differences, “...recent research has established strong parallels between the mechanisms...” so much so that “ It has become useful to view Pavlovian and operant learning as examples of the same basic learning process: Just as Pavlovian based behavior reflects knowledge of a CS-US association, instrumentally based behavior may reflect knowledge of a response-reinforcer association.”

Conditioning of both types can be employed to demonstrate a wide variety of responses in animals and humans. For example, reactions to various

chemicals and drugs can be enhanced or inhibited in many species. Conditioning can occasion and then shape basic learning behaviors, including those involving memory, item discrimination, and categorization. Researchers can also use conditioning to explore how and what animals understand, as well as extend animals' capacities to perform tasks that would be unusual in nature – as in pigeons categorizing the presence or absence of humans in photos ( [Herrnstein and Loveland, 1964](#) ) and different types of music ( [Porter and Neuringer, 1984](#) ). But, as will be taken up just below, conditioning can also result in taste aversions, fears, and phobias.

### **Fear Conditioning**

In the descriptions of both classical and operant conditioning above, all the examples concerned what is termed “ appetitive conditioning.” Simply put ( [Martin-Soelch et al., 2007](#) , p. 426): “ Appetitive conditioning is the process through which new rewards are learned and acquire their motivational salience.” Indeed, the emphasis is on the word “ rewards.” Thus, in the operant conditioning paradigms briefly discussed, the rats, pigeons, puppies all received positive rewards shaping the behaviors desired by the researchers or dog owner. Eventually, after sufficient association with reward, the behaviors themselves become experienced as desirable. Similarly, after their classical conditioning trials, Pavlov's dogs salivated at the bell alone because its tone had been paired to, and thereby associated with, the intrinsically rewarding meat.

But “ aversive conditioning” is equally important, perhaps more so for our purposes. The motivational salience of negative reinforcers is readily learned – with aversive stimuli ranging from psychological punishments to footshocks <https://assignbuster.com/extinction-phenomena-a-biologic-perspective-on-how-and-why-psychoanalysis-works/>

and toxins – all capable of producing conditioned inhibitions, symptoms (such as phobias), anxiety, and fear. Aversive classical conditioning looks much like its appetitive counterpart except that the US is highly negative and the UR is that of fear and avoidance. Thus for example, when a rat “ is exposed to pairing of a neutral CS, such as a tone or light, with an aversive US, such as a footshock; this procedure yields a conditioned fear response to the CS [the tone or light]” ( [Ji and Maren, 2007](#) , p. 749). In operant aversive conditioning negative (punishing) reinforcers are applied after a particular behavior. This leads to the cessation of the behavior, sometimes abruptly and sometimes more gradually. For instance, returning to the world of dog training, dogs engaged in “ counter surfing” (standing up on two legs to obtain food from counters) can be conditioned to stop these activities after surfing behaviors are met with the crashing of cleverly placed pans. This produces a loud aversive negative reinforcer, instead of the positive pleasure of a tasty morsel of food.

Despite the obvious difference in valence between aversive and appetitive types of conditioning, in much of the recent literature (see [Bouton, 1988](#) , [1993](#) , [2004](#) ; [Bouton and Swartzentruber, 1991](#) ; [Bouton et al., 2006](#) ; [Quirk and Mueller, 2008](#) ), the structure of the two is found to be so fundamentally analogous that in most matters of interest they are treated together (I shall take this up in more detail below in the section called “ Extinction”).

However, at least one group of researchers ( [Chang et al., 2009](#) , p. 5) recognizes something of note that is distinctive: “ A unique feature of fear memory is that it can be acquired with as little as one exposure and can persist for a lifetime.” Along these lines I speculate that compared with



appetitive conditioning, fear conditioning is (1) faster, (2) more readily generalizable, and (3) more difficult to render extinct. My hypothesis is based on evolutionary considerations: It would make evolutionary sense for conditioned fears to take hold more readily, to be generalizable in many directions, and then to be harder to supplant with benign memory experiences than would be the case for appetitive CR. For aversive stimuli, false negatives would be far more dangerous and ultimately costly than false positives. Indeed a rustle of grass mistaken for a snake would cost a fleeing animal some energy, but a poisonous snake taken for a rustle of grass could be fatal. Stephen Maren, a neuro-psychobiological researcher specializing in fear conditioning (2011) agrees:

(Regarding) the evolutionary forces that have shaped the two types of learning:

1. Yes, aversive learning is typically much faster and readily generalized. You can go days without food, so the penalties for not rapidly learning about food-predictive stimuli or responses to get food are not as severe as the penalties for failing to anticipate something potentially lethal (predator, speeding car, etc.).
2. Learned fear is rather resistant to extinction. I do not know if anyone has systematically compared the two types of learning with respect to reinstatement/recovery/renewal (of the conditioned fear responses), but my gut reaction is that extinction of fear would be more context-specific as the price of broadly generalizing extinction [that something dangerous now safe (here), is really safe everywhere] might be costly' (personal communication).

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With this important difference in mind, let me now move to the role of conditioning, particularly but not exclusively aversive fear conditioning, in the development of neurotic psychopathologies of various sorts. After that a Section Extinction will follow.

## **The Role of Conditioning in Psychopathology**

In order to establish my claim regarding the extinction efficacy of psychoanalysis, I must first demonstrate that conditioning – aversive and appetitive, classical and operant – actually does play an important role in the sort of psychopathologies seen by psychoanalysts. Further, since my claim is so general, I should be able to demonstrate it using every patient and any patient. And so, I will present in detail one patient, Mr. H, whose case does readily typify the sorts of psychopathological effects (obvious and subtle) resulting from behaviors and actions as well as beliefs, desires, and phantasies, all occasioned by classical and operant conditioning.

Mr. H came into psychoanalytic treatment when he was in his late forties. A geologist of modest success, the presenting symptom was his feeling that his marriage was deteriorating. He was the father of three children, all in their teens when he began his analysis. His wife, a nurse by training, had stayed at home (by choice) for more than a decade in order to raise the children the way both she and Mr. H thought best. Now, with the children in middle and high school, his wife had returned to work. With that major adjustment, Mrs. H was experiencing a new excitement for life, one that she wanted to share with Mr. H, particularly sexually. But the more Mrs. H wanted him, the more distant Mr. H felt. Once in a while when he did allow

sexual intimacy he would suffer a wave of great anxiety, and then tremendous concern for the integrity of his penis. He would consequently rush through intercourse, and/or suffer from premature ejaculation. As we explored this problem Mr. H associated to other fears he had recently developed, all of which he knew to be irrational, and all of which he felt he could manage (unlike the sexual problem). He was afraid of elevators, so he took the stairs. He was afraid of doors slamming on him, so he was very careful, and he always avoided automatic doors. He was afraid of cutting himself on jagged edges of cans, and so his wife always opened these. Doing occasional fieldwork for his job, he found himself in some locations where he became quite unreasonably afraid that he would step into some trap set for animals.

Quite early in the treatment I could (as could any analyst) see a connection among these seemingly disparate fears. Mr. H was afraid that some part of his body would be caught in and damaged by some dangerous hole and its surrounding parts – the elevator and its automatic doors, powerful doors in general, rough-edged cans, animal traps with teeth, and finally the vagina. Did Mr. H also have a phantasy of vagina dentata? Certainly Mr. H suffered from a phobia with symptoms that were spreading and generalizing.

But further questions arose. How did his phobia develop? Why did he have sexual troubles with his wife now, and not in the preceding years of their marriage? What was the central phobic object from which the other fears generalized? These were not questions that could be asked or answered directly. However through the analytic work Mr. H discovered several things.

The sexual problem with his wife was a function of her increased interest in him. During the many years when she was an exhausted mother and housewife, her sexual interest in Mr. H was minimal. Moreover, whatever sexual activity they had had was always initiated by him. This was true, albeit for different reasons, early in their marriage too. Mrs. H was at that time young, and sexually inhibited, as well as uninitiated. She followed Mr. H's lead in all matters sexual. But why was this wonderful midlife change in Mrs. H proving so problematic for Mr. H?

With further analytic work we found some answers, many involving conditioning. First let me describe the aversive classical conditioning event likely central to Mr. H's presenting psychopathology – his sexual anxiety. It occurred when Mr. H was around 4 years old, in particular on the day when he learned to ride a bicycle with no training wheels. He and his father, who had been helping him ride, came rushing into the house, and the screen door banged noisily. Mr. H remembers feeling “on top of the world.” Shouting about his triumph, both his mother and the much loved family dog, a young (but large) German Shepherd, ran toward Mr. H and his father. His mother hugged him, seeming to ignore his father. And the excited (and not yet well trained dog) lunged at Mr. H too, knocking him over. Mr. H felt the wind knocked out of him; he felt scared; and he reflexively started to flail at the dog, who reflexively responded by biting his hand hard, drawing enough blood to increase Mr. H's terror. And in fact Mr. H's hand required a trip to the Emergency Room and several stitches.

In this episode we can see the US – the dog knocking Mr. H over, biting him, injuring him, with the ER trip and stitches to follow; the UR – the pain, fear, and traumatic anxiety occasioned by these events; and the CS – the happy mother and the eager dog, both positively disposed toward Mr. H, and therefore approaching him exuberantly. This part of the episode – the excited interest of the beloved other – was the central feature occasioning the CR, a response seen to continue unchanged even so many years later in his pathological reactions to his wife's sexual advances.

But the story does not end here. This aversive conditioning episode with its conditioned stimulus took place in a context, actually a multifaceted situation that was experienced as many contexts. Thus in addition to the over-excited, too eager, and then biting dog, many other factors comprised the CS and/or its context(s) [5](#). From the emotional side, there were at least two important feelings. First there was the wonderful “on top of the world” feeling of triumph associated with the real success of having learned to ride a bike. Then there was another sort of triumph, as Mr. H felt that he was more important to his mother than was his father. There was at least one identifiable physical context too. The door noisily slamming just preceding the incident can be seen in Mr. H's secondary symptoms, particularly his fear of certain doors.

Further, conditioned aversive stimuli tend to generalize. In other words stimuli related to the CS (those similar to the original in terms of category, or even those closely connected in time or space) can also be expected to give rise to the CR. In fact this was the case for Mr. H. We can note the

generalization of the phobic stimuli producing his fearful (phobic) reactions: he became afraid of all sorts of elements resembling the dog's mouth – the teeth of the animal trap and the jagged can, the strong jaw-like doors of the elevator, inexorable automatic doors, as well as the primary fear of his wife's vaginal musculature [6](#) , [7](#).

Of course one might ask the following question: why did Mr. H develop this sort of phobia and not a fear of dogs, or doctors, or emergency rooms, or blood? A complex question that I cannot answer, there is however more to say about the specific symptoms he did develop – more about his particular phobias, and the role of conditioning in his psychopathology. Some relevant additional information concerns his parents, their relationship to him, and to one another. As Mr. H's psychoanalysis progressed it became increasingly clear that his mother and father contributed (without conscious intent) to the aversive conditioning crystallized by the excited dog/stitches episode. His mother was domineering, warm, loud, and overbearing, while his father was quiet, kind, and unassuming. Especially when Mr. H was in high school, he had worries (which were at the same time unconscious unacceptable wishes) that his mother thought more highly of Mr. H than of his father, and preferred him (her son) over her own husband. Thus when his mother actively encouraged him in his athletic and scholarly endeavors (becoming like the CS, the over-eager and excited dog), Mr. H withdrew from her, and became distant, much as he did decades later with his newly passionate wife. Moreover, especially as he measured himself against his father, who as it happened was suffering from some business losses during Mr. H's adolescence, Mr. H inhibited his own high school achievements. Thus we see <https://assignbuster.com/extinction-phenomena-a-biologic-perspective-on-how-and-why-psychoanalysis-works/>

that his mother's implicit (and natural) attempts at appetitive operant conditioning, aimed toward increasing Mr. H's involvement with her and at heightening his success in school and sports, actually functioned as operant aversive conditioning. Given his unconscious feelings of guilt at his perceived victory over his father both with respect to his mother and with respect to his high school endeavors, and given Mr. H's consequent need to curtail himself in both domains, his mother's encouragement became aversive stimuli – shapers inhibiting Mr. H's behaviors.

Finally, in order to have a more complete picture of Mr. H's complex psychopathology, we must return to an important context aspect of the aversive conditioning event. Remember that emotionally Mr. H was feeling “on top of the world,” triumphant, both over his father and perhaps more importantly because of his real life accomplishment – he could now ride a bicycle. Through the course of the psychoanalysis we became aware of a chronic symptom from which Mr. H suffered almost his whole life, a symptom as debilitating as his sexual problem, and also traceable ultimately to the context of the aversive conditioning. Whenever Mr. H experienced himself as about to be tremendously successful, i. e., whenever an important real life success about which he would likely feel “on top of the world” and triumphant loomed ahead, Mr. H would inhibit his success, kill his victory.

Thus, to take things in reverse chronological order, Mr. H was only moderately successful as a geologist. Many others in his company had more prestige and earned more money. In graduate school, he had given some thought to obtaining a Ph. D., this opening the possibilities to a more high

profile university career or to more lucrative employment than that for which he settled. His plans evanesced however, as his grades dropped precipitously just as he began the application process. He left school with a terminal masters degree. He was a B+ student at college; and in high school, despite a strong start, his grades plummeted in his junior year as he and his classmates contemplated college applications. Note the similarity to his graduate school career. Mr. H's participation in sports and the arts had a similar pattern. He enjoyed his school's theatrical productions, but when offered a significant role, he became anxious and declined. Similarly, when told that he was one of a few students named to compete for first chair violin, Mr. H remembered that his audition piece was critiqued as "workman-like, but wooden, without much feeling." He didn't even win second chair. Finally, in little league from an early age, Mr. H's baseball prowess also always seemed to fade whenever it seemed possible that he could become a truly outstanding player. Functioning as a lifelong defense against the "on top of the world" context of the CS, a CS that would inexorably lead to the conditioned fear response, Mr. H (unconsciously) arranged things to make sure that his achievements were moderate at best.

Although the majority of psychoanalytic cases may not have an aversively CR event that is so striking, most do involve various combinations of the more subtle sort of conditionings, classical and operant, aversive and appetitive, seen in the case of Mr. H [8](#). We will return to Mr. H in discussing psychoanalytic techniques and extinction, but first I must address in some detail the process of extinction itself, with particular emphasis on recent research developments.

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## Extinction

It is widely recognized by modern conditioning researchers [9](#) that although “fear conditioning...can generalize very well across contexts” ( [Bouton, 1988](#), p. 143), “...unlike fear conditioning, extinction is highly context-specific...[it is in fact] a new learning process, ...[in which] the fear reduction results from inhibition rather than erasure of the original fear memory” ( [Chang et al., 2009](#), p. 1). In other words, according to [Bouton et al. \(2006](#), p. 352): “Extinction depends...on new learning that is specific to the context in which it is learned.” That this is true not only for laboratory animals but also for human fear extinction in both laboratory and clinical settings has also been widely established [10](#).

The implications of this are important theoretically and also in more practical terms in order to devise better treatments for several human psychopathologies, including post-traumatic stress disorder, phobias, and a variety of anxiety disorder including panic attack. Naturally it had been logical to assume that by presenting the CS without the US, and therefore without the CR, that extinction would be achieved and the pairing of the CS with the US would be unlearned. For it was the case that after Pavlov’s dogs were exposed to many bell tones without the meat quickly following, the bell (CS) no longer evoked the salivating response. Similarly for aversive classical conditioning, [Quirk \(2002](#), p. 402) reports, “ Conditioned fear responses to a tone paired with footshocks rapidly extinguish when the tone is presented in the absence of the shock.” And indeed, fear responses (like other CR) will diminish significantly after exposure to the CS alone. However as was also clear as early as 1927 when Pavlov reported spontaneous recovery of

extinguished responses, despite the fact that it "...has often been convenient to assume that extinction involves the destruction of the original CS-US association..." this bond is not destroyed " even after extensive extinction training" ( [Bouton, 1988](#) , p. 81). Add to this that fear and other aversively CR are extinguished with more difficulty than other CR, while they reappear more easily, and we can begin to appreciate some of the problems met with in the exposure therapies for human fear psychopathologies.

In order to understand these difficulties better, and before we can return to the main theme of this project – how psychoanalysis may work precisely because it supplies what is needed for more effective extinction – I must provide a detailed account of the problems with extinction, discussing both the specific types of aversive CR reappearance, occurring despite extinction training, and the general finding of the rigid context-dependency of the extinction process. Thus I turn now to descriptions of renewal, spontaneous recovery, reinstatement, and rapid reacquisition of the aversive CR, followed by a discussion of the changing contexts themselves.

## **Renewal**

The renewal effect (i. e., the renewal of the formerly extinguished CR) is the effect in which the context-dependency of extinction is best demonstrated. Renewal effects occur when the extinction trials for a CS take place in a different context from later tests of CS-CR independence. For example, suppose that a rat underwent aversive conditioning in Cage A as follows: A specific tone (CS) was paired with a footshock (US) to produce the conditioned fear response of freezing (UR/CR) to the tone alone. Some time after this conditioned fear was well established, the extinction trials would

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take place, and in Cage B. Here the tone (CS) would be presented alone without the footshocks (US) until the conditioned fear was behaviorally extinguished, i. e., until the tone would no longer give rise to the freezing fear response (CR). Now, some time after the “successful” extinguishing of the conditioned fear response, the tests of the extinction take place. These entail presenting the same tone (CS) alone without the footshocks (US) in several different contexts: in Cage A (the site of the original fear conditioning), Cage B (where extinction took place), and in Cage C, a new area. And here are the results: Only when testing occurred in Cage B did the extinction remain. If testing occurred in Cage A, the site of the initial pairings of tone and footshock, the CS (tone) again yielded CR (freezing) – the conditioned fear was renewed. More critically, if testing occurred in some new place, Cage C, the conditioned fear response also was renewed. Only in the specific context of Cage B was the independence of CS–CR maintained; only Cage B could be considered a “safe here” context [11](#).

The renewal effect is very robust. It has been demonstrated in appetitive as well as aversive conditioning in both classical and operant forms. Further, renewal has been shown not only with laboratory animal subjects, but also with people both in the laboratory and the clinic (see footnotes 7 and 8 for references). As [Ji and Maren\(2007\)](#), p. 751) point out, there have been many attempts to deal with renewal, each involving some way to deal with the fact that “...the excitatory CS–US association established during conditioning is not context-specific and generalizes in all test contexts. In contrast, the inhibitory CS–“no US” association established during extinction is context-specific.” They suggest (p. 751) that it might be the case that activation of

the CS-no US association always “...requires simultaneous presence of the CS and the extinction context.”

### **Spontaneous Recovery**

Noted quite early ( [Pavlov, 1927](#) ), spontaneous recovery of a CR assumed to have been extinguished is now thought by most modern researchers to be a subtype of renewal. Here the very passage of time provides “ a functional change in context” ( [Bouton et al., 2006](#) , p. 354) such that when tests of CS-CR independence occur somewhat after the extinction trials, the CSs presented alone are no longer experienced as part of the extinction contexts and consequently no longer considered “ safe now.” This is the case even when testing takes place in the same physical context as the “ successful” extinction trials (see also [Ji and Maren, 2007](#) , p. 751). Like renewal this effect is robust and widespread.

### **Reinstatement**

In reinstatement, an extinguished CR can be easily re-established if the subject has been exposed to the US alone in a context in which the independence of the CS from the CR will be tested. Thought to be an example of contextual conditioning, the association of the US/UR with some new specific context (Context B) promotes the heretofore extinguished CR to the CS in the new context (Context B) whenever the old CS is introduced into the new context (Context B). Let me illustrate this first schematically and then with a concrete example. Given a subject whose CR has been “ successfully” extinguished:

1. The old US is presented alone (without the CS) in a new context, B, giving rise to the UR and the association Context B-US/UR.
2. Later the old CS alone (not paired with the US) is also presented in new Context B.
3. Although the US and the CS are each presented alone at Context B, and these distinct presentations are separated by time, at Context B the association US/UR-CS is formed yielding the return of CS-CR ( [Bouton et al., 2006](#), p. 353; [Ji and Maren, 2007](#), p. 752; [Bouton, 1993](#), p. 82).

Essentially the conditioning of Context B itself as a site for re-establishing CS-UR/CR has taken place, even though the US and the CS were never paired at Context B! [12](#)

Now to make it clearer, let's use two concrete examples to illustrate. First return to Pavlov's dogs. Suppose a dog is conditioned such that a bell's tone (CS), which had been paired with meat (US), can now elicit salivation (UR/CR). In the next step this conditioning is extinguished to the point that salivation no longer follows the CS by itself (the tone alone). Reinstatement can be produced in a few easy steps. First deliver the meat (US) in a particular kennel, Kennel A. Of course the dog will salivate (UR). Then remove the dog from Kennel A. After some period of time, return the dog to Kennel A and sound the bell (CS). The dog will salivate (CR), often on the first trial, despite this CR having been extinguished.

The same reinstatement pattern applies with aversive conditioning. Take a rat that has undergone successful extinction trials of a conditioned freeze

reaction to a tone (CS) alone, a tone that had been paired with footshocks (US). The rat's fear response will become reinstated if this rat: (1) is placed in an area, Cage B and receives footshocks alone (US), and then (2) some time later is returned to Cage B where the tone alone [CS without US (footshock)] is sounded.

### **Rapid Reacquisition**

The phenomenon of rapid reacquisition provides further evidence that extinction learning (the association CS-no US) does not erase the original conditioned learning (the association CS-US). In situations where rapid reacquisition occurs, the original CR, despite having been rendered behaviorally extinct, emerges extremely quickly, after just one (or a very few) new pairing of the CS with the US. ( [Bouton et al., 2006](#), p. 353).

Attempting to deal with this problem (as well as reinstatement) [Bouton et al. \(2006\)](#), p. 353) propose a paradoxical technique that involves adding a few conditioning trials along with the many trials of extinction. Indeed, this is a counterintuitive plan as the experience of intermittent pairings of a few CS-US trials amidst many CS-no US trials would seem to strengthen the CR, much as behaviors intermittently reinforced are more resistant to extinguishing. But the researchers explain (p. 353) that this procedure could “ make a recent conditioning trial a part of the [overall] extinction context... and thus less likely to retrieve conditioning (as opposed to the [desired] extinction)...during reacquisition.” They continue the explanation: given that the extinction trials are in great preponderance the subject should be able to tolerate the occasional US-CS pairings. Bouton reports (p. 353) having in fact tested out this method, claiming that in recent work of his own “  
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reacquisition was less rapid following an extinction procedure that included occasional trials when the CS was paired with the US” [13](#).

## Contexts

The difficulty in achieving lasting extinction, seen in four types of CR reappearances, demonstrates how dependent extinction is upon context. Thus, before leaving this section it is important to provide an understanding of what can constitute a context. Certainly there are physical contexts in which the conditioning events take place – these are perhaps the most obvious. Less obvious, but no less physical, are the material qualities of the conditioned stimuli themselves, also contributing to highly particular contexts. For example, take the case reported in [Vervliet et al. \(2005\)](#), in which particular geometric figures were paired with shocks such that the figures became the CS. Extinction trials were highly context-specific to the particular size and shape of the figure presented. In other words, successful extinction achieved in initial extinction trials was not preserved in later trials when the size and/or shape of the figure varied perceptibly from those used earlier. On the basis of this finding, it is quite likely that textures and colors, in the visual domain, and pitch and decibel level in the auditory realm – actually whatever characteristics can be perceived by a subject – can constitute specific conditioning and extinction contexts.

In addition to these physical contexts, there are temporal contexts, as was discussed above regarding the phenomenon of spontaneous recovery.

Further, even more subtle contexts exist too. [Bouton and](#)

[Swartzentruber\(1991\)](#), p. 132) for instance, “ encourage a more expanded definition of context” holding that “ nearly any [their emphasis] stimulus in <https://assignbuster.com/extinction-phenomena-a-biologic-perspective-on-how-and-why-psychoanalysis-works/>

the background [of a conditioning event] can potentially play the role of context and control performance in extinction.”

Finally, there are state contexts, i. e., state-dependent learning phenomena, which include state-dependent conditioning and extinction. There are many drugs, e. g., alcohol, some tranquilizers, and stress hormones like ACTH (adrenocorticotropin), all of which induce specific state contexts. For instance, extinction of a conditioned fear achieved under the influence of alcohol, will not hold up when the subject is no longer in an inebriated state (see [Bouton et al., 2006](#), pp. 354–355; [Bouton and Swartzentruber, 1991](#), pp. 132–133). Related to this, and even more interesting, are findings that stress and various emotional states can themselves have contextual effects. If a particular emotion accompanies the conditioning of a response, even after extinction, according to [Bouton and Swartzentruber\(1991](#), p. 135) “encountering an extinguished CS in combination with that emotion could cause a renewal of responding after extinction has occurred. Such a mechanism could account for why phobias and anxiety disorders are sometimes precipitated by stress.”

Given the many types of contexts and the dependence of extinction upon contexts, the next subsection will consider some attempts that conditioning researchers have endeavored or suggested to better achieve extinction.

### **Several Approaches to Extinction, All Involving Many Contexts**

Since conditioned fear responses contribute to many human psychopathologies including phobias and various anxiety disorders, it is an important clinical goal to improve extinction. But this is a goal difficult to



achieve, and understandably so given the modern research findings that the CS-US associations causing conditioned fear responses are never abolished. True, many studies have shown also that these CS-US associations can recede; but this is only through the formation of new memories of CS-no US (i. e., safe CSs), accomplished by a great number of extinction trials in a variety of different contexts. Given this state of affairs clinical researchers have logically considered "...that one way to decrease the effects of contextual change on enhancing the return of fear would be to conduct exposure therapy in multiple contexts so that extinction memories can be cued by multiple contexts" ( [Mystkowski and Mineka, 2007](#) , p. 218) [14](#) . These same authors note however that the results of such interventions have been " inconsistent" at best, even in animal models, and thus conclude that extinction trials in multiple contexts are no panacea (p. 218).

[Hermans et al. \(2006](#) , p. 362) suggested a mode of treatment designed to circumvent these difficulties. They report that "...the presence of the therapist during exposure to anxiety-provoking cues can act as a conditioned inhibitor [of the conditioned fear response] (' when the therapist is present, nothing bad will happen')." But these authors predicted that this type of intervention too would only meet with minimal success. " The presence of the therapist may lead to rapid symptom reduction, but a return of anxiety may occur when the client subsequently confronts the stimuli alone (p. 362)."

Addressing themselves to these dilemmas Bouton and colleagues recommended " treatments that ' bridge' connections between the

extinction context and potential relapse contexts” noting that this sort of intervention “ may be more effective at preventing relapse than treatments designed to ‘ optimize’ extinction learning” ( [Bouton et al., 2006](#), p. 358).

One promising study demonstrating this approach was conducted by [Mystkowski et al. \(2006\)](#) and reported in [Mystkowski and Mineka \(2007\)](#) pp. 216–218. In this study of 48 spider phobics, half were asked to rehearse mentally the treatment context of the extinction trials they had received, just prior to entering subsequent test contexts. This was the “ bridging” intervention. The other 24 participants in the control group were asked to recall a neutral situation, unrelated to the treatment. In two types of test contexts, those identical to the extinction trials and those that were novel, the participants using mental rehearsal of the treatment contexts as a bridge reported significantly less return of fear (on a self-report fear measure). In fact the mental rehearsal subjects tested in novel settings did as well as subjects without the rehearsal instruction who were re-tested in the original extinction context. This is a quite striking result, as new test settings are new contexts and thus likely to promote renewal (of conditioned fear) effects.

Interestingly, other cognitive interventions with human clinical subjects, specifically those involving higher-level judgments, have not proved very successful in extinguishing phobias and other conditioned fear responses. [Mystkowski et al. \(2002\)](#), p. 414) for example, reported on a study they conducted with 63 spider phobics in which “ our results did not support the hypothesis that changing perceptions of safety, danger, control, and predictability mediate and/or moderate a contextually influenced return of

fear.” They concluded (p. 414): “ If the null findings stand up...they imply that contextually based return of fear is not dependent on or affected by judgments of safety and so forth.”

Keeping in mind these problems in achieving extinction – both in studies employing higher-level cognitively mediated processes and in those using straightforward multiple context exposures [15](#) – and especially in light of the potential positive role of imagination in extinction shown in one experiment, we return in the next section to psychoanalysis with two specific questions. First, how does psychoanalysis fare in terms of extinction processes? Second, and more important for this project (and perhaps generally), can the success of classical psychoanalysis best be understand in terms of extinction, i. e., by recognizing that the standard classic techniques actually can and do provide the multiple contexts necessary for approximating extinction of aversively CR?

## **Classical Psychoanalytic Technique and Extinction**

It is my view that for two interconnected reasons classical psychoanalytic technique is such that it promotes extinction learning. First, classical technique is that in which an analysand reclines on a psychoanalytic couch (several times per week is best), freely associating as much as is possible. This attempt to express anything and everything that comes to mind, without regulation and in the absence of the usual conversational cues and social conventions, facilitates the analysand’s imaginative engagement toward the formation of multiple transferences, which are none other than multiple contexts (or at least analogs thereof). Second, classic analytic

technique aims, not only to enable the development of these many transference contexts, but also (and just as important) focuses on analyzing them toward better outcomes – providing multiple contexts of safe trials (CS–no US). This combined action of transference development and transference resolution, carried out intensively and extensively over many transference types, is on my account, the essential equivalent of multiple extinction learning trials taking place in a myriad of different contexts at different levels. Furthermore, I claim that it is the very success thereby produced in achieving extinction that secures much psychoanalytic success. In short when looking for mechanisms to explain how and why classical psychoanalysis works, the biological processes of extinction learning must be considered to be of central importance.

To fill out these claims, this section will consist of two subsections. In the first I will discuss the use of the couch, asserting that its use promotes the development of many transferences, not just one. Moreover, use of the couch, I will hold, allows the quality of imagination necessary to experience each of these transference contexts intensely. In the next subsection, returning to Mr. H's case, I will demonstrate how these intensive and extensive transference experiences actually provide the grounds for extinguishing the psychopathological fear (and other aversive) conditioning symptoms, in the many different contexts necessary for adequate extinction.

### **The Psychoanalytic Couch**

Transferences are ubiquitous. However when we see someone in just one role, as we do our dentist or mail carrier, the transference is usually of a single type and doesn't undergo much alteration. Our spouses, parents,

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children, and siblings, on the other hand are experienced in a great many ways, over decades of shared time together. There are many different sorts of father-transferences, mother-transferences, etc. When we consider the issue of transferences in a psychoanalysis, what is desirable? First let's address the aims of psychoanalysis in general. [Jacobson \(1995\)](#), p. 309) has this to say: "...[an analysis is an] open-ended re-living; exploration; and integration of unconscious issues, unconscious processes, and unconscious modes of functioning, with the goal of understanding them in the service of the resumption of development and the freedom to change." Particularly the phrase "open-ended re-living" suggests that multiple transferences are to be preferred; and this is of course offered without any thought to extinction efficacy. But how can that be accomplished? Even psychoanalysts who question the use of the couch for every patient recognize that for most patients capable of undergoing a psychoanalysis "the use of the couch makes a good experience better" ( [Lichtenberg, 1995](#), p. 393). Why? Because the couch allows, and can maybe even "promote the development of transference of a regressive nature" ( [Gedo, 1995](#), p. 296). Indeed that much is uncontested both by psychoanalysts like Lichtenberg and Gedo, who stress that the couch is certainly not for every patient, and those analysts who are more unreservedly pro-couch including [Grotstein \(1995\)](#) and [Wolf \(1995\)](#), the latter of whom adds that (p. 323), "Specific archaic trauma may be recalled that would not have been accessible without the regressive propensities of couch use."

The idea of an old trauma brings us closer to the topic at hand—aversive conditioning arguably contributing to the psychopathology seen in every

analytic patient. Likewise a comment of Grotstein's ( [1995](#), p. 397) is also helpful for our purposes. He says: "...lying down facilitates a shift from the real [here and now] to the imaginative..." There are then three interrelated claims I want to make here: (1) In order to achieve the many contexts needed for adequate extinction of aversive conditionings, multiple transferences are needed. (2) Moreover, these transferences must be intensely felt, so that a re-experiencing of both the CS-US association can take place along with extinction trials (CS-no US) in many settings and at diverse levels. And, (3) imaginations facilitated by use of the couch are not only instrumental but also essential in allowing the transferences to be both variegated and deeply felt. With their patients lying on a couch, analysts are not constrained to just the single role of helping professional, nor are patients as restrained by social convention as they would be sitting up and facing the psychoanalyst.

Taking up the third claim first, let me offer as evidence for the efficacy of imagination two studies, each far from the realm of psychoanalysis, that are striking. The first is the research already cited above, [Mystkowski et al. \(2006\)](#). Here, spider phobics asked simply to imagine the treatment context (the extinction trial) just prior to the subsequent test of their phobic reactions experienced significantly less fear renewal (on self-report measures). The second is a study whose title "Thought for food: imagined consumption reduces actual consumption," reveals much about its focus. Researchers [Morewedge et al. \(2010\)](#), p. 1530) demonstrated that subjects who repeatedly imagined eating a particular food (30 times) "subsequently consumed less of the...[actual] food [they had imagined] than did people

who repeatedly imagined eating that food fewer times [3], imagined eating a different food [30 times]..., or did not imagine eating a food [but performed another repetitive action].” Whereas Morewedge and colleagues hypothesized (p. 1531) that having subjects imagine just three ingestions might sensitize and stimulate the appetite [16](#), they found that “mentally simulating an experience that is more analogous to repeated exposure (... repeatedly [30 times] imagining the consumption of units of a food)... engender[ed] habituation [i. e., extinguishing responses] to the stimulus.” These findings, that “mere” mental imaginations of a situation are sufficient to cause stimulus-specific extinctions (p. 1533), are extremely important in support of the idea that transferential re-experiences can constitute the many diverse extinction contexts necessary for satisfactory aversive conditioning extinction.

Next, in order to address the first two claims, I will explore the specifics of multiple transferences as intensely felt multiple extinction contexts.

### **Multiple Transferences Serving as Intense Multiple Extinction Contexts**

[Freud \(1914\)](#), p. 154) advocated allowing all of the patient’s (unconscious) conflicts, including the fear and anxiety causing and caused by such conflicts, to be vividly present in the analytic treatment in the form of various transferences. He explained: “...we regularly succeed in giving all of the symptoms of the illness...new transference meaning[s] and in replacing his [the patient’s] ordinary neurosis by a ‘transference-neurosis’ of which he can be cured by the therapeutic work. The transference thus creates an intermediate region between illness and real life...” Freud continued (p. 154):

“The new condition has taken over all the features of the illness; but it  
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represents an artificial illness [in that it is] accessible to our intervention. It is [however] a piece of real experience...”

The transference-neurosis version of the illness can be seen, on my view, as that caused by the reappearance of the conditioned fear, and the interventions to which Freud alludes can be understood as the different transference re-experiences of extinction contexts – various contexts in which the CS is not linked to the US [17](#). Let’s see how this looks for Mr. H, the patient whose psychopathology was described at length above (infra pp. 10-16).

Recall that for Mr. H the CS, defined under the most narrow description, was the exuberant unconstrained approach of beloved others (in this case his mother and the dog). A broader description of the CS – one that might overlap with the original emotional context of the aversive conditioning event – includes Mr. H’s sense of himself as “on top of the world” following a significant accomplishment, and also feeling more successful and favored over his father. The US was the excited dog knocking Mr. H over, and biting him such that a trip to the ER was required; this accompanied by blood and stitches. The UR/CR consisting of fear, anxiety, and pain, began with the lunging dog and continued throughout the episode. In order to avoid the fear, anxiety, and pain associated with the US, Mr. H avoided the CS (feeling good and more successful than rivals) throughout his life, in several manifestations and at many developmental stages, as was described at length earlier.



Not surprisingly then, in Mr. H's psychoanalysis there were many transference instantiations in which some achievement or particular success was on the horizon ("threatening"), with other people about to react with (perceived) over-exuberance. These situations occurred in both major and mundane ways. Taking the quotidian type first, Mr. H's own useful psychoanalytic insight, especially when overtly acknowledged by me (his female analyst), caused him a great deal of anxiety at first and occasionally thereafter. This sort of interchange, of course, occurred throughout the analysis, and Mr. H's reactions were different at different times, depending upon the nature of his transference state. Here is one typical example. During one session, Mr. H felt himself to be particularly insightful and correctly gaged my pleasure at his work. He arrived for his next session feeling extremely anxious. At first we were perplexed, until he revealed that on his way to the session he had a fearful phantasy, one he knew to be irrational: namely that my husband would be angry with him, maybe even try to hurt him. Why? Because my husband would feel diminished by my pleasure in working with Mr. H. Once we understood this, the session could become an intense CS-no US trial with the following features. Despite Mr. H demonstrating his real success as a psychoanalytic patient, and despite his correctly sensing my encouragement of him, nothing untoward happened between Mr. H and my husband, between my husband and me, nor most importantly with Mr. H himself. All of us were unscathed as were our relationships with one another.

The examples of major successes were those that Mr. H achieved either with his wife, in the sexual realm, or at work – all of which continued to cause

anxiety. In order for the analysis to represent (and actually constitute) a set of useful extinction contexts, it was necessary for us (Mr. H and me together) to figure out the nature of the each specific success along with its accompanying anxiety and fear, every time, within whatever transference pattern was occurrent. For instance, there was a situation that was quite parallel to the original aversive conditioning situation. Mr. H got a promotion and raise, rising ahead of a more senior (male) colleague. He was delighted. His wife was proud, and also amorous. So here we have the set up. Owing to a success in which he feels he has bested a father-figure rival, Mr. H started to feel his “on top of the world” feeling. And then, he is met by his wife (in the mother-transference) an exuberant, ardent woman! This particular incident took place, several years into the analysis, after we had done some considerable prior work on the contingent rather than causal nature of the association between Mr. H’s high school successes and the financial problems his father had sustained [18](#). Thus, that particular part of the CS-US association had already profited by a number of transference extinction trials. Still, at that time, Mr. H felt he was not ready for his wife to approach him sexually. And yet he felt if he did not have intercourse with her when she was so excited about his accomplishments, she’d “bite his head off.” He endured sexual intercourse anxiously. Simultaneously he became aware of the “joke” he had unconsciously constructed, and he told it to me in his next session: “What a choice, she’ll bite my head off; or her vagina will damage my penis.” This ushered in a new period of Mr. H himself “designing” extinction trials with respect to allowing himself to tolerate, and then eventually to even enjoy sex initiated by his wife [19](#).

In a similar fashion various transference experiences provided different contexts for extinction (CS-no US) of different aspects of the original aversive conditioning situation. The aspect involving his mother's preference of Mr. H over his father/her husband is easy to demonstrate. Often Mr. H would imagine that I preferred him to other males – my other patients, my husband and other male relatives, my friends and colleagues. Allowing himself this phantasy, but also then realizing that I could value him and other men – something he concluded by watching me interact with other men in tiny episodes over many years [20](#) – proved to be yet another extinction context. During work on this matter, Mr. H also came to believe that his mother did love and respect his father, notwithstanding the periods of financial difficulty his father had experienced.

The generalizations of the original aversive conditioning outward to other “related” CSs were of interest too, whenever they could be experienced and appreciated in a transference context. Never as problematic as his main symptom, Mr. H, just prior to beginning his psychoanalysis did report mild fears of animal traps, jagged can openings, and elevators. One example of a trial of aversive CS-US conditioning that occurred within the analysis (with its predominance of CS-no US trials) involves his having cut himself on just such a jagged can one afternoon at work. He bled quite a bit and did require stitches at a local ER. Mr. H admitted that he felt very anxious to the point of dizziness during much of the experience. And yet, as he told me at our next session, “I lived through it.”

Similarly, although pertaining this time to the generalizing of the US, there was the matter of Mr. H's changing reactions over the years to the occasional dog barking to which we would be subject. My dog, although usually quiet, would once in a while surprise us with her loud barks. In the beginning Mr. H. jumped every time. I wondered with him "Did he worry she was close at hand?" Only later did I realize my own association to his bloody hand following the dog bite trauma. In any case, over the years my dog, helpful as always, allowed the analysis to provide yet another set of extinction contexts. Indeed after some years of experiencing these very intermittent, but surprising, barking jags, Mr. H's reactions extinguished. This can be understood as follows: No matter how excellently the analysis was progressing and no matter how good Mr. H felt, my dog never burst into the consulting room, and never bit him. Indeed she barked, but this helped to establish several instances of CS-no US.

## Conclusion

The case of Mr. H is a typical psychoanalytic case. Both his psychopathology and the classical psychoanalytic work with him – four sessions a week with patient and analyst physically present, and the use of the couch; these technical matters in the service of promoting free association and extensive/intensive imaginative experiences of many transferences at many levels – have been presented in some detail here. This was done in order to demonstrate (1) the "...countless ways in which the conflictual [aversive] situations are embedded..." in his psychopathology [21](#), and (2) the view that the many transferences constitute the multiple extinction contexts at many different levels needed to best approximate extinction of aversively

conditioned psychopathology. Indeed, to the extent that the etiology of much psychopathology is related to aversive/fear conditioning, and since such aversive conditioning is now understood to be easily generalized, but never fully eradicated, psychoanalysis, in providing the myriad of extinction contexts necessary, does seem at least as effective in preventing aversive conditioning reappearances (particularly renewal) as other extant treatments. That said, I am not contending that because psychoanalysis can effect these extinction contexts, psychoanalysis should be the treatment of choice for phobias, PTSD, panic attack, and other anxiety disorders. That sort of recommendation would clearly not be practical, especially in the current climate. I am however making this claim: It is through the rather unique [22](#) use of multifaceted transferences, now shown to serve as multiple extinction contexts, that the success of classical psychoanalysis can be understood. Appreciated in this way, psychoanalysis reveals itself to be as foundationally biological as it is psychological [23](#).

## Conflict of Interest Statement

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Footnotes

1. [^](#)As is true for all outcome research in psychoanalysis, this would not be an easy matter to study. Perhaps, however, an initial study could be as follows: neutral analysts, blind to the type of analysis received by each patient, could evaluate an equal number of both sorts of patients

at various intervals after their treatments. Self-reports from patients and analysts would also be of use. But questions arise: would the research analysts conduct at least some of their interviews using Skype technology?

2. ^ Although a bit awkward, I suppose an analytic patient could recline on a couch during a Skype analytic session.
3. ^ This is not to say that therapies aimed at this higher level are ineffective. In fact classical psychoanalysis, in my view, is uniquely effective, precisely because it alone, unlike the other treatments, operates both on higher-level human autobiographical psychological learning – and on the more basic biological level I intend to outline.
4. ^ While there is no contesting conditioning in organisms as simple as aplysia, there is some debate as to whether or not single celled organisms can undergo true conditioning. This is the case because some hold that a nervous system, however primitive, is necessary for associative learning. Recent work by [Fernando et al. \(2009\)](#) however, suggests that under certain circumstances (at least in principle) even single celled organisms can undergo associative learning, i. e., true conditioning.
5. ^ In naturalistic cases like this the boundary between context and conditioned stimulus proper is not nearly so clear as it is in laboratory experiments.
6. ^ This suggests that it could be the case that many (most?) phobic symptoms are caused by or at least contributed to by some sort of aversive conditioning.

7. [^](#) These generalizations often demonstrate a particular type of similarity – similarity based on primary process (emotional and a-rational) categories rather than secondary process (rational) categories. For more on this see [Brakel \(2009\)](#), esp. pp. 7–8; 2010, esp. pp. 59–62).
8. [^](#) Further, as almost goes without saying, when human beliefs, desires, phantasies, and behaviors are at issue, there are almost always other more complex functions/structures (such as those involved with language content, conscious and unconscious autobiographical memories, and deliberate agential goals) which in addition to underlying conditioning mechanisms operate. (see for example, [Rangel et al., 2008](#) for a review article concerning the interplay of three levels – that which has been conditioned, the habitual level, and the level of goal-directed and autobiographically relevant behavior.) Clearly for the heuristic purposes of this article, the role of conditioning has been highlighted, but the multi-leveled nature not denied. In fact, my own view is that there is always an interaction causally and constitutively in terms of the structure, function, and content in human desires, beliefs, phantasies, and behavior (see Brakel, in preparation). Interestingly too even Rangel et al., 2008, p. 554) do emphasize the singular conditioning level for some psychological maladies: “...reinforcement-learning models predict the existence of valuation malfunctions, in which a drug, a disease or a *developmental event* [Brakel’s emphasis] perturbs the brain’s capacity to assign appropriate value to behavioral

acts or mental states.” (I thank an anonymous reviewer for pointing out the relevance of the Rangel et al. work.)

9. <sup>^</sup> See [Bouton \(1988, 1993, 2004\)](#); [Bouton and Swartzentruber \(1991\)](#); [Quirk \(2002\)](#); [Bouton et al. \(2006\)](#); [Ji and Maren \(2007\)](#); [Chang et al. \(2009\)](#).
10. <sup>^</sup> For a review article see [Hermans et al. \(2006\)](#). For reports on laboratory induced human fear conditioning and extinction see [Vansteenwegen et al. \(2005\)](#); [Vervliet et al. \(2005\)](#). For extinction of fears in the clinic see [Mineka et al. \(1999\)](#); [Mystkowski et al. \(2002\)](#); [Mystkowski and Mineka \(2007\)](#).
11. <sup>^</sup> To use the terminology of the conditioning researchers, only A-B-B preserves extinction, whereas A-B-A and A-B-C (where C is any new context) do not. Moreover A-A-B, where the fear conditioning and extinction occur in the same context, A, but the testing is in any different context, represented here by B, also demonstrates the renewal effect.
12. <sup>^</sup> A particularly potent variant of reinstatement is described in Hermans et al., 2006, p. 363) in which trials of the US without the CS are presented in the same area (Context A) in which the original conditioning took place. Here, when the CS is later presented again in this same area (Context A), the CR (conditioned response) is very easily re-established. This is clearly indicative that conditioning of Context A itself, the entire context of the original conditioning event, takes place.



13.     <sup>^</sup>He refers here to [Bouton et al. \(2004\)](#), and to unpublished studies of Woods and Bouton. I introduce the rather complicated matter of this procedure only because it will prove relevant in the next section where the efficacy of psychoanalytic techniques toward achieving extinction is taken up.
14.     <sup>^</sup>Thinking along similar lines, given that many of the various physical characteristics of the conditioned stimulus (CS) can provide different contexts, [Mystkowski et al. \(2002\)](#), p. 414) proposed that “exposure with as many different alterations of the phobic stimulus as possible would be beneficial when the stimulus is confronted in a new situation.” For spider phobics, for instance, extinction with various different types of spiders – those with hairy long legs, those with thick bodies, small and large – would be most likely to capture whatever “...pertinent features that a person has stored in their fear memory structure (p. 414).” Note that along with the multiple contexts suggested here, these authors touch upon an interesting point recognized by psychoanalysts. Namely, a spider phobia might well represent any one of a number of different unconscious conflicts; hence the unconscious representations of spiders may vary considerably among a group of spider phobics. (This is currently being explored in a study underway at the University of Michigan conducted by Finn, Shevrin, Harley, Wu, and Brakel.)
15.     <sup>^</sup>These difficulties have much to do with the limitations of cognitive behavioral therapies (CBT), in which there are indeed (1) multiple contexts and (2) benign therapists. Psychoanalytic treatment

is different from CBT (and other treatments) in both respects. First, as will become clearer below, psychoanalysis allows (perhaps even promotes) multiple unconsciously mediated transferences. These are not only more deeply held, but of longer duration, providing the type of multiple contexts that do seem more successful in approximating longer term extinction. Second, whatever multiple transferences arise, they are always within the overarching context of a good therapeutic alliance, a working relationship in which the patient and analyst are striving together toward the patient's best interests. (As a patient recently put it: " You are always on ' my' side, where the ' my' means my healthiest self.") This particular overarching positive transference can also be seen as providing a " safe here" context aspect to whatever else goes on in the treatment. (Thanks to an anonymous reviewer for having me make explicit the possible extinction promoting role of the treatment alliance in psychoanalysis. I was implicitly assuming it; perhaps mirroring its implicit ameliorative effects in successful treatments.)

16.     ^ Actually the participants who imagined three repetitions of eating some particular food did not differ significantly from the control participants suggesting that the appetitive sensitization did not occur.
17.     ^ Note that renewal is the most common type of reappearance of aversively conditioned symptoms. Note also that in any psychoanalysis, although the great preponderance of transference experiences (extinction trials) are CS-no US, there are always a few intermittent CS-US. (This will be very clear in the case material below.)

This is important because, according to Bouton et al., 2006, p. 353), in cases subject to renewal a very few aversive conditioning trials in the midst of many extinction trials actually facilitates a more robust extinction (see above p. 7).

18.     <sup>^</sup> Briefly this work was done in several ways. First, experiencing me in a father-transference, Mr. H worried that his accomplishments would result in my failures. He observed instead that his achievements were co-occurrent with some important publications of mine. Relatedly, Mr. H gradually became aware that the successes of his own children were not inversely correlated with his own achievements. He had worried about that, and more so had become concerned that he was either undermining his own progress or that of his children, making him a not-successful father. By confirming on several different occasions that his own achievements, and that of his children and analyst, could indeed all vary independently, another aspect of the CS-US underwent a set of extinction trials (CS-no US), all according to these various (but specific) transference situations. In general much work was done throughout the analysis on Mr. H's lifelong avoidance of success. We could see the avoidance in almost every developmental phase, with many such situations re-experienced in transference versions. All to the good, those that could be re-experienced in that way in effect constituted specific context extinction trials.

19.     <sup>^</sup> Interestingly, without thinking explicitly in this way at all, he observed the “ safe here” context aspect of extinction, in that he only

very slowly allowed different locations for love-making and different sexual positions.

20.     <sup>^</sup> During Mr. H's several years of psychoanalysis at my office in my home, he had the opportunity to see me interact briefly and very occasionally with (1) other male patients, (2) my husband, (3) a handful of different workmen, and (4) a male neighbor.

21.     <sup>^</sup> This quotation is from [Moore and Fine's, 1990](#), p. 210) Psychoanalytic terms and concepts. I use these words as they indeed pertain to Mr. H. But moreover, because the quote appears in the dictionary entry defining the general need for "working through" – "a crucial part of the analytic process" involving the multiple interpretations of the same problem again and again – this quotation highlights the prototypical nature of Mr. H's psychopathology. (p. 210).

22.     <sup>^</sup> Subliminal presentations of a stimulus may have a related effect. This is because people, unaware of the origin of a subliminal stimulus, can experience it as coming from any one of a number of sources. Consider then the following situation potentially available with subliminal exposure treatments designed for phobics: It is possible that early subliminal trials could be assimilated to the patient's internal representation of the feared phobic object, whereas later trials could be seen as several neutral benign versions of the object. In this way subliminal exposures too might facilitate multiple extinctions. Although this is speculative, there are some new data to support this view (see Snodgrass et al., in preparation).

23. [^](#) Note that this article is not a polemic for biological versus psychological aspects of treatment. Rather, it is an article describing the discovery of the biological within the context of the psychological processes that are a part of classical psychoanalytic technique.

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