Psychoanalytische Perspectieven, 2002, 20, 4: 525-548

THE EVOLUTION OF THE UNCONSCIOUS

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Introduction

This paper will present an original synthesis drawing on work in evolutionary biology, primatology, cognitive science and psychoanalysis that provides both a novel perspective on the natural history of the human mind and a new scientific framework for understanding psychoanalytic clinical concepts and phenomena.

In order to avoid misunderstanding, I want to begin by clarifying just what this version of psychoanalysis is. I regard psychoanalysis as a potential science because although it does not fully and consistently embrace the methodological norms that characterize scientific activity, there is no intrinsic reason why it cannot do so.

A science is defined by its *domain,* the region of nature that it investigates and purports to explain. Biology, for example, studies organisms: its domain consists of all living (and once-living) things. Biology is not intrinsically tied to a single theory, or set of theories, about living things. Even if all of the theories presently accepted by biologists were shown to be false, biology as a science would continue to exist. It is the domain-centered definition of science that makes possible this continuity in the face of dynamic change, encouraging scientists to relentlessly pit awkward data against existing theories, and to replace these whenever possible with theories of greater explanatory scope and predictive power. What is the domain of psychoanalysis? A ready answer might be "the unconscious", but this definition is at once too broad and too narrow. It is too broad because a great deal of what goes on unconsciously is of little or no concern to psychoanalysis. The work of David Marr (1982), for instance, identifies a whole series of neuro-computational processes that unconsciously occur in the split second between a stream of photons striking the retina and the formation of an almost three-dimensional visual image in consciousness. Although fascinating, these processes are far removed

from psychoanalytic concerns. Alternatively, one could describe the domain of psychoanalysis as the *Freudian* unconscious, but this "narrow" definition is merely circular, and remains too firmly bound to a particular theorization. We need an *independent* characterization of just what it was that Freud was trying to get at with his theory of the unconscious, which would secure a basis for psychoanalysis *even if all of Freud's specific theories prove to be mistaken*. I suggest the following definition as a first approximation: Psychoanalysis is that discipline which investigates the ways that minds unconsciously process emotionally significant information.[1]

Notice that the definition refers to "minds" rather than "human minds". This leaves open the odd possibility that psychoanalysis might apply to non-human primates. After all, we think psychoanalytically about the minds of pre-linguistic infants. Might it not also be possible to think psychoanalytically about chimpanzees? The baseline requirement would appear to be a brain capable of generating the right kind of mental representations. But the expression "emotionally significant information" in the definition is unacceptably vague. I therefore include the following addendum: "Emotionally significant information" is information concerning conflicts within and between organisms.

This is still too vague. On this definition, my ambivalence about whether to wear a blue jacket or a brown one would count as the proper subject matter of psychoanalysis. We need to capture the biologically fundamental nature of these conflicts in our definitional net. I therefore include as second addendum: The conflicting interests that form the subject-matter of psychoanalysis are evolved psychological propensities.

A preference for brown jackets (or blue ones) is not an evolved biological propensity. On this definition, my ambivalence about which jacket to wear becomes a psychoanalytic issue only insofar as it is derived from deeper concerns such as conflicts regarding sexual attractiveness, dominance, etc. In this account, psychoanalysis, as a science or at least a potential science, is inextricably bound up with evolutionary biology.

In the founding document of neuropsychoanalysis, Sigmund Freud (1950*a*) distinguished between what he described as mechanical and biological modes of explanation for neuropsychological phenomena. Mechanical explanation characterizes the operation of the brain exclusively in terms of its physical structure, the forces impinging upon it, and the environment in which it is situated. Purely mechanical accounts are insufficient for understanding biological systems, because these systems

1. See Langs (1992*a*) for a similar recommendation.

possess evolved functions as well as structure. The biological level of organization introduces normative principles into scientific discourse. A biological system such as the eye is said to *malfunction* when it fails to fulfill its biological task, whereas we cannot reasonably say that a stone malfunctions, that the wind malfunctions or that a star malfunctions because there is nothing that stones, wind and stars are designed to do.[2]

In a footnote to the English translation of the "Project for a scientific psychology" the editor, James Strachey, unhelpfully informs us that by "biological" Freud meant that a characteristic is "determined genetically – by its survival value for the species" (Freud, 1950*a* [1895]: 305n). Although Mendel published his theory of genetics in 1865, it languished in obscurity until the year 1900, when it was discovered by Hugo De Vries, Erich von Tschermak and Carl Correns, but the synthesis of genetics with Darwinian theory, masterminded by Theodosius Dobzhansky, did not occur until the 1930s. It is therefore extremely unlikely that Freud knew anything about genetics in 1895, and it is virtually impossible that he understood the genetical underpinnings of natural selection as Strachey implies. By "biological" explanation Freud simply meant evolutionary explanation. At the time that Strachey wrote his footnote it was widely thought that evolution works for the benefit of the species. This is no longer widely accepted by evolutionary biologists, although it continues to be a widespread misconception amongst the general public.

At its most basic, contemporary evolutionary theory states that those genes that enhance their own reproductive success spread through populations. Amongst sexually reproducing taxa, genes proliferate by (a) building organisms that survive at least to reproductive age and (b) are sufficiently attractive to the opposite sex to have mating opportunities. Features or "characters" of organisms that contribute to (a) and (b) are described as "fitness enhancing" or "adaptive".

Evolutionary change is largely driven by environmental change. Characters that are adaptive in one environment may be disadvantageous in another. An environmental fact that forces evolutionary change is called a "selection pressure". For example, fair skin may have been adaptive to human beings evolving in northern climates because it allowed them to capture sunlight to manufacture vitamin D. However, the present-day depletion of the ozone layer may make fair-skinned people vulnerable to

2. These distinctions come from the work of the philosopher Ruth Garrett Millikan (1984, 1993). In fact, both living systems and human artifacts can malfunction, because both are designed to fulfill certain functions. I am using the word "designed" in the text to refer to both the effects of the forces of natural selection and the power of human artifice.

lethal melanomas. Using this example, in the absence of extensive medical or preventative intervention, and all other relevant factors being equal, we can anticipate an evolutionary shift towards darker-skinned populations because the damaging effects of ultraviolet radiation exerts a selection pressure limiting the reproductive success of fair-skinned individuals.

The speed of evolution is proportional to the rate of reproduction. Microorganisms evolve quickly because they reproduce rapidly. This is why the excessive use of antibiotics results in the evolution of resistant strains. Human beings reproduce rather slowly, which means that we evolve slowly. This fact has very important implications for understanding our species. The slow pace of human evolution means that our bodies and minds are adapted to the physical and social environments in which we evolved, which were in many respects significantly different from those in which we currently reside. According to the prevailing "out of Africa" theory, we evolved as foragers and hunter-gatherers in small communities on the plains of southern Africa. The best available evidence suggests that the hominid line diverged from that of the chimpanzees some six million years ago, whereas recorded history only extends back to about 3000 BC. To put this in perspective, if the time since the origin of the first hominids is represented by a single day, the period of recorded history would be the final seventy-two seconds.

Freud was certainly right that mechanical explanations of neural processes should be complemented by evolutionary considerations. In fact, there is a burgeoning scientific literature arguing that the activity of the brain is constrained by its evolutionary history. We cannot do just *anything* with our brains. An infant's mind is not a *tabula rasa*, as the empiricist philosophers and behaviorist psychologists once asserted. It bears the imprint of five million years of hominid adaptations. We are born, live and die with an evolved human nature consisting of dispositions that enhanced the reproductive success of our prehistoric ancestors. This feature of our design implies that some and perhaps many of our psychological characteristics may be anachronistic. Crawford (1998) designates traits that were adaptive in the Pleistocene environment but are maladaptive today as *pseudopathologies.* The practice of infanticide, which was probably widely practiced by prehistoric humans, may be an example of pseudopathology (Hrdy, 1999). *Quasinormal behaviors* are forms of activity that would have been maladaptive in our ancestral environment, but which are now culturally accepted or encouraged. The practice of step-parenting, which involves the biologically bizarre activity of investing resources in genetically unrelated children, may be an example of quasinormal behav-

ior. Quasinormal behaviors tend to be unstable and ambivalent because they conflict with our evolved nature. In the case of step parenting, research shows that being a stepchild greatly increases the risk of being a victim of domestic abuse or child homicide (Daly & Wilson, 1981).

Having now offered a working definition of what I mean by psychoanalysis and spelled out some of the fundamentals of evolutionary theory, I shall explore how evolutionary theory may contribute to our understanding of the unconscious and some related, typically psychoanalytic issues.

The evolution of self-deception

Psychoanalytic theory asserts that all human beings tend to keep themselves in ignorance of important aspects of their own nature, referring to this propensity as "repression" (in its generic sense), resistance or "defense". Biologists use the term "self-deception" to denote the motivated restriction of conscious access to psychological information and, like psychoanalysts, they have theorized about this phenomenon. The predominant biological theory of self-deception grew out attempts to explain altruism, biologically defined as any practice that enhances of the fitness of another at one's own cost. For many years the existence of altruism could only be understood in light of the notion of natural selection for the good of the species. But this did not make Darwinian sense. The logic of natural selection is individualistic.

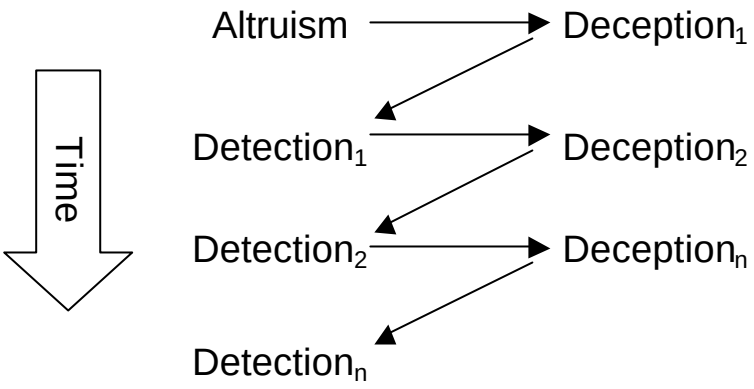
William Hamilton (1963) demonstrated how a focus on the gene as the fundamental unit of selection elegantly explains the existence of altruism between genetically related individuals. Closely related kin, such as parents, offspring and siblings, have strong genetic similarities. Consider the relationship between parent and offspring. Parents donate 50% of their genes to each child. By making altruistic sacrifices for the benefit of a single child, a parent enhances the likelihood that 25% of his or her genes will be reproduced in each of their children's children. The life of a parent, then, has roughly the same genetic value as the life of two children and four grandchildren. Hamilton's rule, as it is called, generates all sorts of testable hypotheses. For example, it predicts that older mothers should be inclined to make greater sacrifices for their children than younger mothers because as a woman grows older her reproductive value declines relative to that of her children. It predicts that women are less likely to abort twins than to abort single embryos. It predicts that maternal grandmothers are likely to behave more altruistically towards their grandchildren than pater-

nal grandfathers (with maternal grandfathers and paternal grandmothers lying in between the two extremes) because the inevitable uncertainty of paternity casts genetic relatedness into doubt. Hamilton's theory turned out to be an extraordinarily powerful tool for understanding animal behavior. Most notably, it neatly explained a problem that had perplexed Darwin, the remarkable altruism of the Hymenoptera (social insects).

What about acts of altruism between non-kin? Robert Trivers (1971) proposed a model for the evolution of altruism between unrelated individuals based on the principle of reciprocity. Given an appropriate relationship between costs and benefits, it makes sense to behave altruistically towards non-kin if they are likely to return the favor. However, as Trivers (1971) pointed out, having received a benefit, an organism may fail to reciprocate ("gross cheating"), or reciprocate only incompletely ("subtle cheating"). Altruism thus exerts a selection pressure for the evolution of cheating repertoires, and cheating is facilitated by deception, which explains why "dishonest signaling", the biological synonym for lying, is so widespread in nature (Alexander, 1975; Dawkins, 1976; Dawkins & Krebs, 1978; Otte, 1975; Wickler, 1968).

Deceptive maneuvers have been studied in many species of flora and fauna, including our closest non-human relatives, the chimpanzees, who are capable of sophisticated tactical deception of one another (de Waal, 1986; Miles, 1986). Just as the proliferation of reciprocal altruism encouraged the evolution of deception, so intraspecific cheating facilitated the evolution of cognitive mechanisms for *discriminative* altruism and cheater detection, leading to an escalating co-evolutionary "arms race" in which ever more sophisticated methods of deception were matched by ever more sophisticated methods of detecting and safeguarding against deception. The ruthless logic of Darwinian evolution sees to it that those organisms best able to identify deceit and take appropriate action to prevent being exploited are more likely to survive and reproduce than those who are not.

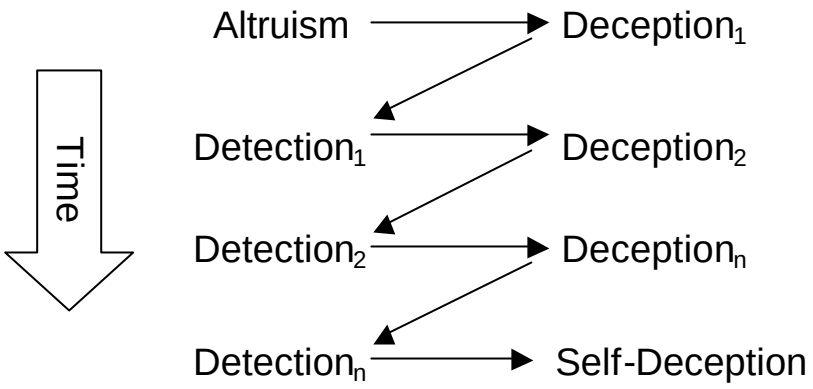
The need to monitor cheating would obviously be most acute amongst highly social creatures living in fairly large groups. In such cases, the opportunities for cheating are so multifarious, and the social networks so intricate, that natural selection would be expected to favor strong social cognitive abilities. According to the thesis introduced by Humphrey (1976) and subsequently extended and developed by others (e.g., Byrne & Whiten, 1988; Whiten & Byrne, 1988, 1997; Byrne, 1993, 1994) this is precisely what occurred. Intraspecific conflict, deception, and the consequent need for sophisticated mind-reading abilities were significant driving forces behind the evolution of primate intelligence.



The Arms Race Between Deception and Detection

Each wave of deception and deception-detection in Trivers' scenario creates selection pressures for the next in an ever-increasing spiral of interactional complexity. After many such cycles, a peculiar difficulty is encountered. Intelligent deceivers become all too aware that they may be apprehended, and that severe and possibly fatal reprisals may result. The burden of consciousness thus creates anxiety, which is betrayed by non-verbal signs such as involuntary modifications of posture, movement, and changes of voice pitch (Ekman, 1988, 1992) which in turn increases the likelihood of being detected, giving further cause for anxiety, and so on. Trivers (1976, 1981, 1985*b*, 1988, 1991, 2000) argues that this situation set the scene for the evolution of self-deception. "In our own species we recognize that shifty eyes, sweaty palms, and croaky voices may indicate the stress that accompanies conscious knowledge of attempted deception. By becoming unconscious of its deception, the deceiver hides these signs from the observer. He or she can lie without the nervousness that accompanies deception" (Trivers, 1985*b*: 415-416).

Trivers' self-deception, then, is a means to an end: the *unconscious deception* of others. "Biologists propose that the overriding function of self-deception is the more fluid deception of *others.* That is, hiding aspects of reality from the conscious mind also hides these aspects more deeply from others. An *unconscious* deceiver is not expected to show signs of the stress associated with consciously trying to perpetrate deception" (Trivers, 1988: vii).



The Evolution of Self-Deception

Self-deception and the evolution of the unconscious

Cognitive science teaches us that many automatic or routine processes are normally performed unconsciously. These processes are not actively excluded from awareness: they are *structurally* unconscious. Although it is indisputable that Freud possessed a conception of the cognitive unconscious, which he spelled out in the "Project for a scientific psychology" (1950*a* [1895]) as well as a number of other writings (see Smith, 1999), he was mainly concerned with those mental processes that remain unconscious because of the role they play in intrapsychic conflict.

Conscious thought is strikingly linear and possesses very restricted information-bearing capacities. In contrast to this, unconscious processing seems to be massively parallel (Dennett, 1991).[3] In other words, whereas conscious mind can keep track of only one thing or just a few things at a time, the unconscious mind is able to do a number of things at once. Consciousness whistles a tune, whereas the unconscious plays a symphony. This peculiarity of conscious thought has been neglected in the evolutionary literature. I believe that it has had extremely important ramifications for our psychological evolution.

"I operate on the assumption," writes Trivers, "that the split between conscious and unconscious evolved long before processes of deception and self-deception affected transfers of information between the two spheres. The split itself probably related to energy efficiency: conscious-

3. It might be said that my use of Dennett begs more questions than it answers because I do not provide a truly Dennettian account of conscious seriality as the simulation of a serial processor by the parallel architecture of the brain. Because of limitations of space this issue will not be discussed in the present paper, but will be dealt with in a paper now in preparation.

ness is an energy-expensive state that permits much more concentrated mental attention. We can imagine that over long periods of evolutionary time the brain either turned a whole series of functions over to the unconscious or left them there. Thus, under normal circumstances, we run our heart rate, our breathing, and other internal processes unconsciously. We only choose to be conscious about them... under conditions in which it makes sense to invest extra energy and faculties to scrutinize something carefully" (Trivers, 1991: 179).

Claxton (1994, 1997) argues that consciousness began as a state of hyper-arousal in response to threat or uncertainty. In fact, he suggests that consciousness is simply a byproduct of anxiety that has no real adaptive value. However, the idea that consciousness evolved in the context of dealing with threat or uncertainty is logically independent of the counter-intuitive claim that it possesses no function. Claxton (1997: 161) contradicts his own position when he asserts that "Consciousness is for self-protection".

There are two primal situations in which consciousness is useful and perhaps necessary: evading predators and stalking prey. When a herd of placidly grazing antelope get the scent of a lion they instantly become alert and poised for flight. We are all aware from personal experience of how danger instantaneously galvanizes attention. Walking down an isolated street late at night and hearing footsteps behind you of an unidentified person you become *hyperaware*. Watching an animal stalk its prey similarly gives the impression of a pure intensity of consciousness, of laser-like mental focus. I have spent endless hours catching frogs, lizards, snakes and other small animals and can confirm that this requires extraordinarily intense conscious attention. To catch a quickly-moving species of lizard one must be responsive to the smallest signs indicating which move the lizard is likely to make in order to avoid capture while, at the same time, the lizard is vigilantly scrutinizing you for the slightest sign of movement in its direction. The situation is rather like a high-stakes poker game in which neither party wants the other to guess what cards they are holding. Let us take as a working hypothesis that consciousness evolved, at least in part, in the context of predator-prey relations.

The important role played by deception in primate social life would presumably have promoted the heightening of *social* consciousness. In other words, apes must not only be on guard against a stalking leopard, they must also be vigilant about what members of their own species might do to them. The ability to detect and use subtle clues to anticipate the moment-to-moment hunting tactics of a hungry leopard were perhaps

redeployed to detect signs of cheating and deception by conspecifics, and the cognitive adaptations responsible for predatory prowess were redeployed for *social* predation: the deception and exploitation of one's own kind. Consciousness became chronic rather than episodic, because of the ongoing vigilance required to navigate complex social systems.

Eventually, after numerous iterations of the arms race between deception and detection which progressively enhanced primate intelligence, we arrive at genus *Homo.* At this point a remarkable situation developed in which "other human beings became the principal hostile force of nature – the principal cause of failure to survive or reproduce" (Alexander, 1987: 78). As the Roman dramatist Plautus put it in a sentence quoted by Freud (1930*a*) in *Civilization and its Discontents*, "Homo homini lupus" – "Man is a wolf to man".

Hominids solved the problem of interspecific predation by living in large cooperative groups (Dunbar, 1996) but this development also imposed costs, a Pleistocene *Unbehagen in der Kultur.* A linear increase in group size resulted in an exponential burst of social complexity. "In a group of five individuals I have to keep track of a set of four relationships between myself and the other group members, but I have to monitor six additional relationships involving the other four individuals. In a group of twenty, I have to keep track of nineteen relationships between myself and fellow group members, and 171 third-party relationships involving the other nineteen members of the group. While my relationships with everyone else has increased roughly fivefold with the fivefold increase in group size, the number of third-party relationships I have to keep track of has increased almost thirtyfold" (*Ibid*.: 65).

Dunbar's ingenious research suggests that the need to maintain social relations imposed strict constraints on the size of pre-linguistic hominid groups. Pre-linguistic primates maintain social cohesion largely by means of the one-to-one practice of grooming, which in some species may occupy up to 20% of the day. The closest modern humans come to grooming is the nonverbal language of touch between lovers and the physical exchanges between mothers and their young infants. Primates find grooming intensely pleasurable, releasing cascades of endorphins, the brain's own endogenous opiates, in response to the fingers of their peers (*Ibid*.). Primates do not groom one another indiscriminately. They form "grooming cliques" (subgroups that frequently groom one another), the members of which develop powerful coalitions. A primate in trouble can often rely on a member of its grooming clique to come to its aid.

Dunbar (1996) discovered a remarkable correlation between primate group size, neocortex size (relative to overall brain mass) and mean grooming clique size. The correlation between group size and neocortex size is probably best explained by the cognitive demands made by the social complexity of larger groups. Group size correlates with grooming clique size because "the animals have to form larger and larger grooming cliques to protect themselves from the harassment they invariably experience when living in large groups" (*Ibid*.: 68). Given these correlations the human neocortex ratio would suggest that the size of primal groups of *Homo sapiens* consisted of about 150 individuals, a figure supported by archeological, anthropological and sociological data, however the robust correlation between group size and mean grooming clique size shows that if groups consisting of 150 individuals were to engage in the practice of grooming, the grooming cliques would be so large that a full 40% of their time would be taken up with this activity. "But no species that has to earn its living in the real world could possibly sustain such a heavy investment of time in grooming. It would starve in the process... Our ancestors must have faced a terrible dilemma: on the one hand there was relentless ecological pressure to increase group size, while on the other time-budgeting placed a severe upper limit on the size of groups they could maintain" (*Ibid*.: 78).

The evolution of language provided a solution when words replaced touch as the primary currency of social exchange. Language possesses two attributes that made it well suited to this task: (a) it enables intimate social intercourse with several individuals simultaneously, therefore greatly extending the size of grooming cliques without extending "grooming" time, and (b) it permits exchanges of detailed social information: "It allows you to say a great deal about yourself, your likes and dislikes, the kind of person you are; it also allows you to convey in numerous subtle ways something about your reliability as an ally or friend" (*Ibid*.: 78).

Now, let us consider the implications that all of this may have had for the configuration of the human mind. Coevolutionary enhancement of hominid social intelligence and social complexity brought the faculty of consciousness to bear more and more on the struggles intrinsic to group life. Conscious thought, which had originally been an episodic phenomenon reserved for predator-prey interactions, now became an ongoing feature of the baroque Machiavellian choreography of social exchange. However, as we have noted, consciousness is basically linear in nature and is able to carry only a very limited informational load. The focal character of consciousness is ideal for monitoring one-to-one predator-prey relations

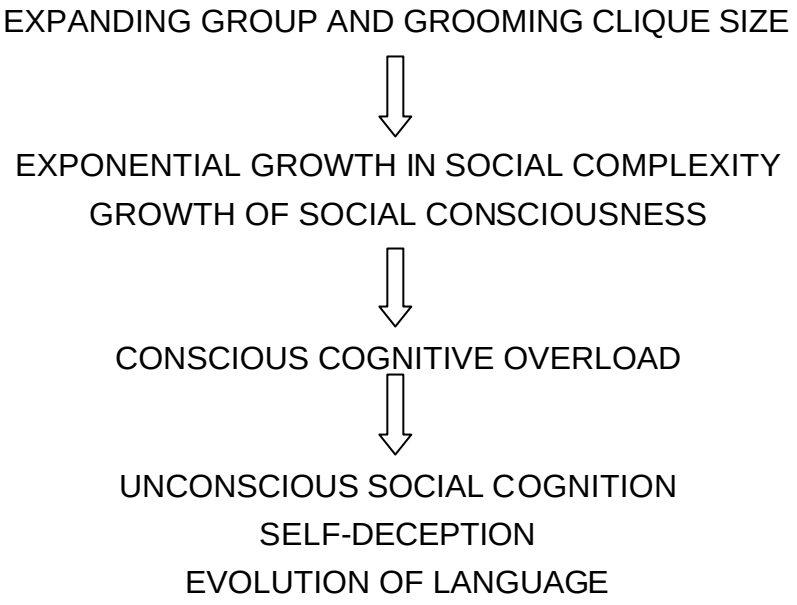
but is spectacularly ill-adapted for the extremely complicated simultaneous interactions of group life. It seems obvious that consciousness would have been unable to cope with the novel cognitive demands placed upon it. I suggest that the evolutionary solution to the problem of conscious cognitive overload was to *outsource* a good deal of social cognition to the massively parallel unconscious apparatus.[4] Returning now to Trivers' theory of the origin of self-deception, we can recognize that this reconfiguration of the mind provided the additional adaptive advantage of permitting our ancestors to eliminate signs of stress consequent upon conscious deception and therefore making it possible for them to deceive their fellows more effectively. On this analysis, unconscious social cognition possesses two primary adaptive functions: it eliminates cognitive overload and facilitates effective deception of others. It also involves two distinct but interlocking mental components: (a) unconscious social planning, including deception, manipulation and the like, and (b) unconscious social perception of the behavior of those with whom one engages in social intercourse. This second feature is actually implied by, although not explicitly stated in, Trivers' theory because effective deception requires a perceptual feedback loop for monitoring the moment-to-moment responses of the victim. Attempting to deceive without being informed by perceptual feedback would be like trying to play a game of chess without knowing what moves your adversary is making. The logic of Trivers' theory demands that this occurs *unconsciously*, so as not to short-circuit the adaptive advantages of self-deception.

One implication of this hypothesis, which we will have occasion to revisit below, is that unconscious social perception should be biased in favor of its owner's interests (because its function is ultimately to enhance its owner's reproductive success), and we should also expect it to be somewhat "paranoid" with respect to the intentions of others. Nature favors the ability to make quick and dirty decisions. When a twig snaps somewhere in the underbrush it is better to flee from what you suspect is a tiger than to wait and see what beast saunters out of the bushes.

The intimate intertwining of expanding group size, social-cognitive architecture and the evolution of language indicates that there might be some special connection between speech and the structure of consciousness. Trivers (1981) suggests that the verbal module, which is in a sense the public face of the mind, became specialized for promoting falsehood both to oneself and to others. Although it is perhaps possible that the evolution of self-deception preceded the evolution of language, it seems

4. A version of this thesis was suggested by Langs (1995, 1996).

beyond doubt that the emergence of language greatly enhanced our facility both to deceive and to self-deceive (Trivers, 1991).



Evolution of the Unconscious

Evidence from psychoanalysis

If human beings naturally tend towards self-deception, this must be true of psychoanalysts and their patients. There is no shortage of literature on the self-deceptive propensities of analysands. The bulk of the psychoanalytic clinical literature of consists of variations on this theme. As Freud (1905*e*: 77-78) wrote: "When I set myself the task of bringing to light what human beings keep hidden within them, not by the compelling power of hypnosis, but by observing what they say and what they show, I thought that the task was a harder one than it really is. He that has eyes to see and ears to hear may convince himself that no mortal can keep a secret. If his lips are silent, he chatters with his fingertips; betrayal oozes out of him at every pore. And thus the task of making conscious the most hidden recesses of the mind is one which it is quite possible to accomplish".

Freud's heroic account of the analyst's role as the unmasker of the patient's self-deceptions is highly asymmetrical. Freud mentions neither the analyst's self-deception nor the patient's efforts to penetrate it. This is hardly surprising. After all, analysts write the books, and analysts' views

of themselves should in theory be subject to the deeply rooted self-serving and self-deceptive biases described by Trivers.

The issue of analysts' self-deception comes under the heading of countertransference, which Freud (1910*d*) described as the intrusion of psychoanalysts' psychological problems into their clinical work. Countertransference is mentioned only four times in Freud's published writings (in Freud, 1910*d*, 1915*a*). The very term has a defensive ring. The "counter" of "countertransference" implies that it is *reactive*: a response to the patient's transference. "Countertransference" thus refers to analysts' unconscious conflicts *as activated by their patients*. As Freud wrote to Jung on New Year's Eve, 1911: "We must never let our poor neurotics drive us crazy. I believe an article on 'counter-transference' is sorely needed; of course, we could not publish it, we should have to circulate copies among ourselves" (McGuire, 1974: 253).

Freud understood that psychoanalysts, like everyone else, have an emotional investment in avoiding emotional reality, and that psychoanalytic treatment is compromised by this tendency. He enjoined psychoanalysts to master their self-deceptive tendencies, but how was this to be accomplished? Freud's remarks on this problem followed a trajectory of increasingly extreme recommendations. First, in 1910, he counseled continuous self-analysis (Freud, 1910*d*), but soon realized that this was inadequate (there is an old psychoanalytic joke that goes "There is only one problem with self-analysis: the countertransference"). Two years later, he advised that all trainee psychoanalysts undergo analysis in order to eliminate the unconscious conflicts held responsible for countertransference (Freud, 1912*b*). In the end, he recommended that all analysts undergo reanalysis every five years (Freud, 1937*c*).

Countertransference was discussed far more extensively in the later psychoanalytic literature, but the meaning of the term underwent an extraordinary shift. The exemplar of this trend was Paula Heimann's (1950) pioneering paper "On countertransference". Heimann believed that countertransference is caused by analysts' unconscious *sensitivity*: that is, she believed that seemingly inappropriate affective states experienced by analysts stem from their *patients'* unconscious conflicts and phantasies. Countertransference is therefore ‘the patient's *creation'* (*Ibid*.: 77, emphasis in original) and an expression of the patient's (rather than the analyst's) psychological problems.

Considered from an evolutionary perspective there is something right and something wrong with Heimann's claim. She was right to assert that psychoanalysts possess an unconscious ability to monitor the psychologi-

cal implications of their patients' behavior, but she was wrong in not granting patients the same unconscious powers with respect to their analysts. She was right to emphasize the perceptive and adaptive features of the analyst's unconscious, but she was wrong to self-deceptively use this to minimize analysts' propensity for self-deception. Of course, these biases are precisely what evolutionary theory would lead us to anticipate.

As we have seen, evolutionary theory implies that psychoanalysts' tendency to self-deceive is *not* a residue of infantile conflicts and anxieties, and therefore cannot be eliminated by self-analysis, psychoanalytic treatment or redefinition. It implies that countertransference is *inevitably* present and *inevitably* obscured by self-deception. Darwinian psychoanalysts Malcolm Slavin and Owen Kriegman note that even a "good-enough" psychoanalytic endeavor is "rife with elements of deception and self-deception" (Slavin & Kriegman, 1992: 243). If this is the case, the problem of countertransference begins to look intractable.

Patients as mind-readers

Can patients make use of unconscious social perception to read their analysts' minds? Evolutionary theory implies that they can. In fact, it implies that they may be better at it than their analysts. There is far more at stake for patients in analytic relationships than there is for their therapists. Because there is more at stake, there is more to lose and we should therefore anticipate that they will mobilize a higher level of unconscious vigilance. As I have already noted, this vigilance should be somewhat "paranoid" by ordinary conscious standards, biased in favor of the patient's interests and prone to overestimate the analyst's malicious intent.[5]

Biological reasoning suggests that the psychoanalytic "frame" should be crucial in this connection. The frame consists of the most fundamental defining features of the psychoanalytic relationship, and includes such factors as the analyst's neutrality, anonymity and other role requirements; the duration, location and regularity of sessions; privacy and confidentiality; the fee and the conditions of termination. There are two reasons why the frame should be particularly relevant to the study of self-deception and unconscious perception of it in the psychoanalytic situation. 1. If the ideal frame consists of a set of rules governing the interaction between patient

5. It would be wrong to conclude that this process is the basis for clinical transference. Transference distortions are classically defined as inappropriate unconscious displacements based on infantile prototypes, whereas the process that I am describing is based on biased but nonetheless plausible unconscious readings of the implications of the analyst's behavior.

and analyst, the purpose of which is to secure what Lloyd (1990: 295) calls "the formal parameters of reciprocity" which define costs and benefits to both parties; 2. Management of the frame is primarily non-verbal. Words are biologically inexpensive (Trivers, 1985*b*), involving minimal investment of resources (in common parlance "words are cheap") whereas actions are relatively costly (which is why "actions speak louder than words"). The costliness of actions makes them more likely than words to reveal the analyst's true interests, whereas the cheapness of words makes them more likely than actions to reflect the analyst's deceptive strategies (Lloyd, 1990). We therefore would also expect unconscious perception to home in on what an analyst *does* rather than what they *say* that they are doing.

Psychoanalytic and cognitive views on unconscious perception and communication

Freud occasionally described unconscious perception in the psychoanalytic situation. Here is an example from "Recommendations to Physicians Practicing Psycho-Analysis" (1912*e*: 115-116): "To put it in a formula: he [the analyst] must turn his own unconscious like a receptive organ towards the transmitting unconscious of the patient. He must adjust himself to the patient as a telephone receiver is adjusted to the transmitting microphone. Just as the receiver converts back into sound waves the electric oscillations in the telephone line which were set up by sound waves, so the doctor's unconscious is able, from the derivatives of the unconscious which are transmitted to him, to reconstruct that unconscious, which has determined the patient's free-associations".

A remark published the following year is even more explicit: "I have had good reason for asserting that everyone possesses in his own unconscious an instrument with which he can interpret the utterances of the unconscious in other people" (1913*i*: 320). In the same year he claimed that this faculty is not confined to members of the psychoanalytic profession, but is a universal design feature of the human mind: "Psycho-analysis has shown us that everyone possesses in his unconscious mental activity an apparatus which enables him to interpret other people's reactions, that is, to undo the distortions which other people have imposed upon the expression of their feelings" (Freud, 1912-1913: 159).

Freud's conception of analysts' unconscious sensitivity was and is embraced by many coming after him. I have already mentioned one of these, Paula Heimann, who placed unconscious interpersonal perception at

the heart of her theory of countertransference. In spite of his universal claim, Freud's published writings and correspondence contain no reference to patients unmasking their analysts in this way. The first psychoanalyst to write about this phenomenon seems to have been Sandor Ferenczi (Myers, 1996; Smith, 1998), who presented his views in a paper delivered in 1932, shortly before his death. Ferenczi stated that psycho-analytic patients "have an extremely refined feeling for the wishes, tendencies, moods and dislikes of the analyst, *even should these feelings remain totally unconscious to the analyst* himself" (Ferenczi, 1933: 293, emphasis added). In the same paper he remarked on patients' ability to discriminate between sincere and insincere empathy as follows: "I do not know whether they can tell the difference by the sound of our voice, by the choice of our words, or in some other way. In any event they display a strange, almost clairvoyant knowledge of the thoughts and emotions of the analyst. In this situation it seems hardly possible to deceive the patient and if such deceit is attempted, it can only lead to bad consequences" (*Ibid*.: 296).

Several psychoanalysts touched on the issue after Ferenczi. One of these was Margaret Little, who had helped prepare the English edition of Ferenczi's papers. Little (1951: 37) believed that analysts may have an investment in keeping their patients ill, stating that "we may exploit a patient's illness for our own purposes… and he will respond to this". She also asserted that analysts have "the greatest resistance" to acknowledging their countertransferences, but "not to refer to countertransference is tantamount to denying its existence or forbidding the patient to know or speak about it" (*Ibid*.: 37). Little believed that psychoanalytic patients unconsciously see through these denials and unconsciously communicate this to their analysts. "Part of the analyst's task," she wrote, "is to bring it into consciousness" (*Ibid*.: 45).

In the early 1970s Robert Langs began to develop a systematic approach to understanding unconscious perception in the psychoanalytic situation (Langs, 1978*a*, 1978*b*, 1979, 1980, 1981, 1985, 1992*a*, 1992*b*). Langs' "communicative approach" to psychoanalysis is essentially a systematic approach to countertransference analysis. The theory claims that psychotherapy patients unconsciously monitor and interpret the behavior of their therapists, particularly with respect to the frame. This process of "unconscious meaning analysis" (Dorpat & Miller, 1992) is rapid, incisive and concerned with here-and-now interactions. The output from this module is indirectly expressed by means of metaphors and analogies embedded in manifestly unrelated narratives.

Evidence from cognitive science suggests that narrative and non-narrative modes of communication involve distinct forms of cognition (e.g. Paivio, 1986; Bruner, 1986; Bucci, 1997). Furthermore, the degree of narrativity in a communication can be measured (Langs *et al.*, 1993; Mergenthaler & Bucci, 1993). Paleopsychologists Merlin Donald (1991) and Robin Dunbar (1996) describe narrative as probably the most ancient form of verbal communication. "Gossip" is perhaps the most common form of narration. It is also extremely widespread, making up a large proportion of social communication, apparently taking up 60 to 70% of conversation time (Dunbar, 1996; Emler, 1992). Some psychologists conjecture that gossip may have had evolved in order to police cheating within ancestral social groups (Cosmides & Tooby, 1987; Emler, 1992; Enquist & Leimar, 1993).

Robert Haskell, a cognitive psychologist, independently identified many of the same narrative phenomena mentioned by Langs (Haskell, 1987*a*, 1987*b*, 1987*c*, 1988, 1989*a*, 1989*b*, 1990, 1991, 1999*a*, 1999*b*, 2001) as well as calling attention to narrative phenomena not recognized by Langs, such as the unconscious role of numbers and homophony in narrative communication. Unlike Langs, whose observations stemmed from the practice and supervision of one-to-one psychoanalysis, Haskell's data come from the observations made in small groups and naturalistic conversational settings. His research resulted in the creation of a complex model of how an array of unconscious cognitive operations are used to select and manipulate narrative images which, when introduced into ordinary conversations, carry unconscious meaning. Haskell refers to this as "subliteral" communication.[6] Whatever their disagreements, both Langs and Haskell agree on four crucial points: 1. Subliteral communications are vehicles for messages of a kind that are not normally tolerated in polite conversation. To speak subliterally is to speak the unspeakable. The *meaning* of subliteral communications violates social taboos, but their *form* disguises this fact; 2. Subliteral communication is unconscious. Even in very transparent examples, the speaker is liable to deny that they had any such thing in mind; 3. Subliteral communication is lawful. The unconscious selection of narrative imagery covaries with events occurring in the immediate conversational setting; 4. Subliteral communications are particularly responsive to the fundamental structure of the conversational setting (in psychoanalysis, the "frame"), and to the biologically significant

6. The question of the evolution and adaptive functions of subliteral communication will be addressed in another paper.

variables active within that setting (e.g. dominance, cheating, resources, sex, coalitions and third parties).

Illustration

The following is a real although simplified account of a psychotherapeutic session. Although it was specifically chosen to illustrate some of the processes described above, it is not untypical.

A psychotherapist in private practice suggests to her patient that he increase the frequency of their meetings from one to two sessions per week, because he is now getting into "deep" material and the therapist feels that more frequent appointments will help him work through these issues more effectively. The patient's first response is to say that this sounds like a good idea. He then proceeds to recount the plot of the movie *Jaws*, which he had recently seen on television, emphasizing the rapacious greed of the shark. Next, he describes seeing prostitutes touting for business on the street. Finally, he mentions that there are many beggars and drug pushers in the area frequented by prostitutes.

The therapist's intervention consisted of two elements: (a) a proposed alteration in the parameters of their relationship and (b) an explanation for that alteration. We would expect the patient to unconsciously pay greater attention to (a) than to (b) on grounds of the biological inexpensiveness of words and the likelihood that they are vehicles for the therapist's efforts at deception and self-deception. By the same token, we would expect him to preferentially devote unconscious cognitive resources to the analysis of (b) in order to determine whether it represents a Machiavellian act of social manipulation that is in the therapist's rather than the patient's interests. Finally, we would anticipate that the patient's conscious mind would have a rather naïve understanding of the implications of the intervention.

The patient's first response appears to confirm our third expectation, as he shows no indication of conscious suspicion of the motives for the therapist's proposal. This is rather typical of the limited social-cognitive abilities of the conscious mind.

The patient then switches to narrative mode. He tells his therapist several stories that are rich in narrative imagery and manifestly irrelevant to the immediate conversational context. The first narrative episode describes a vicious and greedy predator, the shark. Although manifestly referring to the movie, the story may have been selected because of the patient unconsciously perceived greedy and predatory implications in the proposed increase. The second narrative image of prostitutes may subliterally refer

to the financial implications of the proposed modification. The patient may unconsciously suspect that the therapist desires to increase the number of weekly sessions out of financial self-interest rather than altruistic concern about his well being. The third narrative concerning beggars and drug pushers continues to emphasize the therapist's covert financial agenda but also implies, more sinisterly, that the patient suspects that the therapist wishes to make him dependent on her. The patient's subliteral analysis of the therapist's intervention is far more incisive, subtle and biologically realistic than his conscious understanding. It is also biased in the patient's interests, exaggeratedly representing the therapist's self-serving pursuit of money as deadly, relentless predation. Assuming the essential plausibility of the patient's unconscious reading of the therapist's intervention, it is interesting to note that although the therapist's self-deception, her "fictitious narrative of intention" (Trivers, 2000: 119), managed to hoodwink the patient's conscious mind, it was powerless to neutralize his unconscious perceptions, suggesting that the power of unconscious social cognition may in part be a response to the selection pressure exerted by self-deception in the interest of deceit, and may be the most recent innovation in the long evolutionary struggle between forces of deception and deception detection.

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Acknowledgement
I would like to thank my wife Subrena Smith for useful comments on the adaptive functions of unconscious social cognition, which helped me to conceptualize the significance of unconscious perceptual feedback loops, and for her comments on an earlier version of this paper. I would also like to thank Dr. Robert Haskell for his helpful suggestions.

Summary

The evolution of the unconscious

Psychoanalysis is reconceptualized as the scientific study of conflicting biological propensities. According to neo-Darwinian theory self-deception arose as a result of an evolutionary arms race between intraspecific deception and detection amongst hominids. The evolution of self-deception modified an earlier split between conscious and unconscious mental activities. Unconscious social cognition emerged to avoid conscious overload when dealing with highly

complex Machiavellian social relations. Evolutionary theory suggests that countertransference, in the classical Freudian sense of the word, is inevitable. Psychoanalytic clinical literature provides support for the hypothesis of unconscious social cognition, as does cognitive science. Evolutionary theory suggests that unconscious responses to the psychoanalytic situation should be particularly responses to modifications of the frame. A clinical example is presented.

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Key words
Unconscious, Evolution, Self-Deception, Deception, Communication.