THE NARCISSAN FIRE

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ABSTRACT

This article attempts to integrate psychological constructs into sociobiological theory, as suggested by Leak and Christopher (1982), and Daley and Wilson (1983). In *Promethean Fire,* Lumsden and Wilson argue that something "peculiar and powerful" held back the evolution of subhuman species. It is suggested that, on the contrary, something was elaborated and magnified in human evolution which propelled the species across the intellectual gulf that separates it from its evolutionary predecessors. Nonhuman animals rely on adaptations whose primary functions are to subserve physical needs. Human evolution, on the other hand, entailed the emergence of adaptations that subserved a psychological need. This involved the homeostatic maintenance of a psychological state, labelled egotism or narcissism, which (a) generated exploratory behaviours resulting in controlling some aspects of natural selection, and (b) resulted in a change, relative to other primates, in the mechanisms and patterns of pairbonding. Unlike the view offered by Lumsden and Wilson, this presentation accounts for both pairbonding and the incest taboo with the same mechanisms.

In a recent article, Leak and Christopher (1982) call for the integration of Freudian constructs into sociobiological theory, suggesting that many of these constructs may be viewed as "adaptations to the selection pressures that have shaped the hominid gene pool" (p. 321). Efforts to introduce psychological and/or psychoanalytic variables into evolutionary and sociobiological theory occasionally encounter resistance (see Noonan, 1987; Ruse, 1987). The most frequent criticism involves the allegation that such efforts are conjectural, untestable, and unfalsifiable, citing Popper's (1972, 1976) celebrated contention that Darwin's theory of evolution and natural selection is not a valid scientific theory.

These criticisms have not themselves gone unchallenged (Noonan, 1987; Quinn & Dunham, 1982). According to Ruse (1987), to deny genuine scientific status to sociobiological approaches is "to apply standards that you would probably not apply to physics" (p. 9). Also, Searle (1978) argues that "What we need to do is rid the sociobiologist of the illusion that there is something unscientific about introducing the study of mental states as part of the study of animal behavior" (p. 182). Plotkin (1982) has observed that evolution is used mostly by behavioural scientists in its "weaker or broader sense," that is, as explanation without prediction. Thus, when it is invoked, criticisms are incurred about the lack of precision, and when it is not, psychology "is castigated for its failure to appreciate evolutionary theory at all." But Plotkin also points out that

> if evolution *is* the central conceptual framework of biology... and if psychology *has* been singularly guilty of failing to incorporate itself into the modern synthesis of evolutionary biology, then surely it is better that the increasing numbers of behavioral scientists cognizant of evolutionary thinking should use the theory in its broader, if weaker, sense than not to use it at all. (p. 59)

This paper attempts to demonstrate the merit of Leak and Christopher's (1982) suggestion by proposing that what distinguishes humans from subhuman species is the reliance of the latter upon evolutionary adaptations whose principal functions were to satiate physical needs, whereas the evolution of humans was dominated by adaptations which fulfilled a genetically given psychological need. Thus, it is not necessary, as

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Kenneth Burstein passed away suddenly on 21 October 1987. The present article is condensed from one he had submitted earlier to *Canadian Psychology*. The original article was edited by two former students (J. Damron and C. Rea) and one colleague (Vito Modigliani). In condensing the original article, we strove to keep Burstein's message intact. We hope we have done so.

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Lumsden and Wilson (1983) seem to contend, that "something very peculiar and powerful must have been holding the other evolving systems back" (p. 155). It is suggested here, on the contrary, that something very peculiar and powerful was acquired or magnified in human evolution which generated the unique and heretofore unknown behaviours that essentially accelerated evolution and virtually propelled humankind across the intellectual gulf that today seems to separate it from its evolutionary predecessors.

Evolution of Choice Behaviour

In primitive species, behaviour is controlled by reflexive mechanisms; that is, behaviour is entirely under stimulus control. Reflexive behaviours maximize the probability of survival in an environment in which the resources critical for survival are in fairly constant supply. If sunlight and the presence of water are sufficient for survival, and as long as the supply of these critical resources is relatively unchanged, complete stimulus control might provide the most efficient survival system even though noncritical aspects of the environment undergo cataclysmic changes. Many plants and primitive animals have survived in a relatively unchanged state for over 2 billion years.

In the course of evolution, some species acquired flexibility which has allowed them to survive in a capricious, changing environment. Climatic changes, competition from increasing numbers within the species, or from other developing species, etc., may have reduced or exhausted food supplies. Regardless of speculative causes, automatic, stimulus-controlled behaviours form a decreasing proportion of the behavioural repertoires of organisms as one goes "up" the phylogenetic tree, being replaced or complemented by choice behaviours which are under voluntary and individual control.

With the development of choice behaviour there had to develop concomitantly some criterion system for the selection of appropriate behaviours from among an organism's now potentially vast repertoire. The possession of such a repertoire would be of limited benefit if selection from amongst all possible behaviours were random, because random selection would not allow for the elimination of previously selected behaviours which were unsuccessful or for the continued selection of highly successful behaviours.

Burstein (1977) suggested that this criterion system is the emotional system, noting that it is difficult to conceive of any function for an emotional system in a completely reflexive organism. The emotional system provides the feedback necessary for those kinds of behaviour modification that are associated with learning. Burstein regards the voluntary and emotional systems as having coevolved, a position also maintained by Symons (1979) and Plutchik (1977). According to Burstein, stimuli which can be used as rewards or "reinforcers" are not, as some learning theorists have contended, need or drive reducers, but stimuli that elicit relatively intense positive (up) or negative (down) affective experiences.

Burstein (1977) suggested that despite the general tendency for reflexive behaviours to be replaced by choice behaviours, a particular class of responses has remained predominantly under reflexive control. These are the immediate reactions to natural events which are lethal, or potentially lethal, to the organism. For example, upon being touched by a painful stimulus, the skeletal system immediately and automatically withdraws the tissue in contact. Similarly, one doesn't decide to clot blood, or to reject foreign bodies, or to replace injured cells, or to faint when the cranial blood supply is low.

Thus, a portion of the response system is organized to react automatically to potentially lethal events. This portion of the behaviour repertoire is a *threat-escape* system. However, this system has a deficiency: It requires actual encounter with the environmental threat. An organism would increase its relative fitness if it could somehow respond appropriately before the noxious stimulus was actually encountered. The emotional system is "wired" to achieve this: It complements and enhances the effectiveness of the threat-escape system, and it is part of a *threat-avoidance* system. Its responses are triggered by stimulus characteristics that are correlated with threatening stimuli (see Burstein, 1977, pp. 119–122). In the natural world, sudden or novel stimuli often are correlated with danger and with pain. The emotional system is programmed to react automatically to sudden or novel stimuli. Thus, turning an electric light on (or off) elicits an electrodermal (orienting) response that is correlated with reports of fear or anxiety. For evolving hominids, a sudden change in lighting indicated possible movement between the perceiver and the source of light.

Novel stimuli, because they are by definition unknown elements in the environment, are correlated with danger. The unknown is always a threat. In fairly recent years, novelty has been shown to be at the root of several phenomena previously attributed to other variables. Thus, Timbergen (1952) originally interpreted the behaviour of a male stickleback towards another male displaying a brilliant red underbelly as reproductive aggression. However, recent research by Muckenstern (1969) indicates that such behaviour is best interpreted as aggression toward novelty (Bootzin, Loftus, & Zajonc, 1983). Similarly, both Lorenz (1939) and Tinbergen (1951) proposed that the shape and movement of highly specific stimulus configurations triggered innate fear mechanisms in chicks and ducklings. However, subsequent research (Hirsch, Lindley, & Tolman, 1955; Martin & Melvin, 1964) revealed that the major contributor to the bird's fear was neither the shape nor the direction of movement but the novelty of the stimulus.

Along similar lines, the phenomena of neophobia and bait-shyness, in which hungry organisms resist eating novel food, and the findings of some researchers (Kalat & Rozin, 1971; Revusky, 1971) that rats have a tendency to avoid novel flavours have led some investigators (e.g., Garcia & Koelling, 1966) to suggest that such avoidant behaviours are mediated by special preprogrammed systems which operate independently of conventional learning processes.

Implicit in this formulation is the notion that the immediate responses to potentially aversive stimuli have minimal inter- or intra-individual variability. Responses to appetitive stimuli, on the other hand, involve fairly high inter- and intra-individual variability. Up feelings — positive affective responses — determine appetitive (choice) behaviours, and relative fitness is increased if an individual's up feelings, and therefore his or her choice, are different from those of other individuals. The more diversity with respect to individual appetitive responses, the more efficiently the environmental resources are utilized. In the extreme case, if just one individual obtains up feelings from eating tomatoes, one from eating cabbage, one from eating lettuce, etc., the relative fitness of each individual is enhanced, since competition for the selected resource components in the environment is decreased.

In summary, it is suggested that positive affective responses are not typically mediated by the same system that mediates negative affective responses. Further, negative affective responses are preemptive and overriding with respect to positive affective responses or to negative affective responses of lesser intensity.

The Role of Psychological Fitness

Each of the evolutionary developments in the foregoing sketch appears to enhance the physical fitness of members of both human and nonhuman species. In attempting to explain human behaviour, is there any justification for adding to this picture factors involved in psychological fitness?

A fairly large number of theorists award psychological needs a central role in the explanation of human behaviour. For example, Freud posited several instincts that were considered innate and immutable and which, through reflecting a somatic process, were represented as psychological states (Freud, 1955, p. 66). Carl Rogers spoke of a biological pressure to fulfill the genetic blueprint, Alfred Adler of a core tendency of personality that was striving for superiority or perfection, and Maslow of needs to satisfy physical and psychological survival (see Maddi, 1968, for a review).

Lionel Tiger, in *Optimism: The Biology of Hope* (1979), seems to be one of the most recent authors to speak of a genetically given psychological state. According to Tiger, there are states, feelings, emotions, etc. which are experienced by virtually all intact members of the human species. For him, optimism is one such state, and his point, that optimism may have had evolutionary utility, applies to all similar states. Daley and Wilson (1983, p. 310) likewise suggest the existence of several psychological traits "that might qualify as panhuman and adaptively intelligible" (e.g., male sexual jealousy).

It is essential to note that there have been various criticisms of the premises underlying the work of Daley and Wilson, Tiger, and other sociobiologists. Adaptive explanations for relatively universal behaviours in humans have been labelled as "irresponsible, racist, and genocidal" (Allen et al., 1976), as "confusing current utility with past historical origins" (Gould, 1983) and "as not recognizing the flexibility and diversity of human cultures" (Sahlins, 1976). Most of these criticisms seem to have been countered by Alcock (1984,

pp. 506–511) who concludes that it is fairer, more challenging, and more consistent to accept, as a working hypothesis, that some universal human traits may have been naturally selected than to simply dismiss such a possibility. I would like to suggest that egotism or narcissism may be one such trait.

Human history is filled with much evidence that individuals attempt to display their superiority over others. The most successful attempts are contained in *The Guinness Book of Records*. The tendency of humans to assume and to attempt to demonstrate their superiority is a fact of human society. Each human appears to presume that his or her nervous system is best for determining the validity of answers with respect to what is good, right, beautiful, intelligent, etc. This type of egotism, involving perhaps the overestimation of the efficiency of one's own nervous system, would increase relative fitness, for one's behaviour would be relatively resistant to change dictated by the values and needs of other individuals with other genes. This would result in perseveration despite negative reinforcement or punishment from others. Those nervous systems which perseverated more successfully under such conditions would enhance reproductive success. Greenwald (1980) suggests that certain cognitivie biases in humans (egocentricity, beneffectance, and conservatism) are generated by an "intrapsychic analog of genetic evolution" and cites Popper (1963, p. 312) and Kuhn (1970, p. 65) as supporting his contention that these biases result in perseverative behaviours which are evolutionarily adaptive.

The Evolution of a Psychological State

Freud felt that primary narcissism was universal in mankind (1959, pp. 139–143) and contended that it had suffered three great blows at the hands of science: the first, by the Copernican revolution which stripped man from his central place in the universe; the second by Darwin, who took away man's uniqueness in relation to other animals; and the third by psychoanalysis itself, which attacked the Cartesian notion of man as a rational animal.

Primary narcissism has certain connotations and implications which need to be addressed. For instance, there is no necessity, as the term would be used here, for the postulation of any relationship to libidinal energy or to any other Freudian variables. For this reason, perhaps it would be advantageous to suggest the term *egotism*, which would not exclude Freudian implications, but which would also not require them. Egotism is assumed to include selfishness, conceit, a preoccupation with oneself, an inflated state of vanity and self-importance, and, above all, an innate belief that one is, in most respects, an above average, if not superior, being. Egotism and narcissism will be used as analogous terms.

One could ask "Where did this narcissistic or egotistic state come from?" Presumably, it came from the same place that light-sensitive cells, or the basilar membrane, or maternal behaviour, or any other adaptation came from. As Stephen Jay Gould (1983) notes, "A potentially minor genetic change entails a host of complex nonadaptive consequences. The primary flexibility of evolution may arise from nonadaptive by-products that occasonally permit organisms to strike out in new and unpredictable directions" (p. 156).

Whatever its origins, the presence of a narcissistic state is congruent with the notion of a "selfish gene" and provides a mechanism for increasing inclusive fitness. An individual within a species who perceived his or her performance with respect to, say, hunting or gathering to be inferior to that of other individuals would find that perception painful. Within a system which is basically geared to pain avoidance, there would seem to be two possibilities for eliminating this pain. The level of performance could be elevated, or, alternatively, the perception of an inferior performance could be eliminated by distortion, which also, as will be explained below, can increase relative fitness. Thus, the evolution of a narcissistic state set the occasion for the development of distortive (Freudian) defence mechanisms which homeostatically maintained that state.

In order to avoid pain, the human organism must either alter the perceptions or their interpretation. Freudian defense mechanisms, such as rationalization, reaction formation, projection, etc., achieve this purpose, but dependency on mechanisms of denial and distortion is insufficient to sustain egotism. Undeniable, observable accomplishments are necessary for a relatively painless egotism; knowledge, answers, deeds are required for sustaining a sense of self-importance.

Antecedents and Consequences of the Evolution of Narcissism

Perhaps related to the above core personality tendencies and to egotism is the fact that the behaviour of many mammalian species, from cat to chimpanzee, seems intrinsically motivated by exploration, play, and curiosity (Haber, 1965). Montgomery (1954) showed that rats preferred a corridor which led to a maze of alleys rather than one which led to food. In situations where the choice is between food and a complex maze, the choice of the latter (exploratory) behaviour can be viewed as an attempt to escape captivity in a noxious situation. Laboratory animals are essentially prisoners. Human prisoners would likely also prefer a door which led to previously unexamined corridors over a door which led to a previously fully examined dining room. Curiosity and exploration may have initially been chosen because they maximized the probability of escape from painful situations.

More intriguing demonstrations of curiosity and exploration behaviour involve responses which are difficult to relate to escape behaviours. Harlow, Harlow, and Meyer (1950) presented a mechanical puzzle to four rhesus monkeys which involved a hasp and staple attached to a small piece of wood, quite similar to hinges typically used to secure a door. These monkeys quickly removed the hook which secured the hasp and would repeatedly do so when the puzzle was reset. Similarly, Voitonis (1949) showed that monkeys became progressively quicker at opening a puzzle box which contained nothing but stones, and Butler (1958) reported that monkeys would learn specific responses for the opportunity to observe the movement of an electric train.

There is empirical support for the suggestion that exploratory behaviours increase as one goes up the phylogenetic tree. Glickman and Sroges (1966) examined the responses of several hundred mammals and a smaller group of reptiles. They reported that primates and carnivores devoted considerably more responses to novel stimuli than did rodents, insectivores, and marsupials. Reptiles exhibited the lowest level of responding to novel stimuli. More recently, Hemmer (1980) has demonstrated that the progressive increase in cortical tissue in primates reflects an increase in time devoted to behaviours associated with curiosity, again supporting the view expressed here. On the basis of an extensive review, Berlyne (1960) concludes that "It seems also to be a general rule that animals with more highly developed nervous systems are more given to investigatory and playful behaviour generally" (p. 148).

At this point it may be useful to return to a phenomenon, referred to previously, that may appear to be in contradiction to the notion of exploratory behaviour. Previously, it was suggested that there is a genetically given affective fear response to novel stimuli. Although it has been demonstrated that this fear response adapts out with continued encounters if there are no noxious consequences, there is the problem of why an organism so wired would, if there were a choice, again expose itself to such a stimulus. The most adaptive behaviour would seem to be to avoid all novel stimulation.

There have been several attempts to resolve this apparent contradiction. Mowrer (1960, pp. 175–176) contends that the exploratory drive and the fear drive are the same, though the former involves approaching a specific stimulus and the latter involves avoiding it. His position is that, if the fear is elicited by a clear and definite threat, the result is always avoidance, but if the threat is somewhat vague and uncertain, fear results in approach behaviour (reality testing) in an attempt to specify precisely what it is that is to be avoided. Bootzin et al. (1983) offer a somewhat similar position, contending that "most animals react to novelty in two ways: if the stimulus is overpowering, the animal flees, seeking shelter; if the stimulus moves slowly, is not noisy, and looks manageable, the animal attacks" (p. 164).

One could also explain approach to a stimulus which elicits fear in terms of the avoidance of a more intense fear (or pain). Thus, an organism experiencing pain because of food deprivation might overcome or endure the fear elicited by novel stimulation, if this was a necessary priority to reducing its pain. The position taken here is that either or both of these lines of reasoning may contribute to the understanding of exploratory behaviour and curiosity in both subhumans and humans, but that with the evolution of egotism, another force was created for overcoming the tendency to avoid novel stimuli and environments.

Berlyne (1960) noted that, aside from exploratory behaviour, one of the most acute problems in motivation stems from the fact of perceptual and intellectual activities that are engaged in for their own sake and not simply as an aid to handling practical problems. He included under

this rubric "everything that is classified as recreation entertainment of 'idle curiosity,' as well as art, philosophy, and pure (as distinct from applied) science" (p. 5). Berlyne called such activities "ludic behaviors" (from *ludare,* to play) and offered as a definition "any behavior that does not have a biological function that we can clearly recognize" (p. 5).

Theories about the nature and function of ludic behaviour also abound. Some hypothesize that it is an outlet for surplus energy. Others feel its primary function is to keep organisms physiologically trim. It may be that behaviours involved in play, curiosity, and exploration initially evolved solely in relation to needs and activities which were associated with physical survival, but with the evolution of a psychological need, these behaviours were released from their former constraint and spawned a new kind of organism, one which collected information for the sake of knowing (i.e., they operated in the service of egotism).

If, as previously suggested, egotism demanded a display of accomplishments, then it would be supported by knowing and doing things that others did not know and could not do. In short, egotism is nourished and monitored by information not available in others. The demands of egotism are continuous. An occasional deed or answer is insufficient to bolster a voracious ego. A fairly steady diet of accomplishments, or what I refer to as *ego-morsels,* is required. According to this hypothesis, egotism, because it was nourished and sustained by the knowledge provided by exploratory behaviour and curiosity, generated a whole new range of activities which resulted in understanding, manipulating, and controlling the events and processes governing the evolution of humans.

The Psychophysics of Truth

At this point it may be advantageous to make a distinction between knowledge and answers. The formulation of any answer, correct or incorrect, would provide ego-nourishment. Whether one offered as an explanation for rain the evaporation and condensation of water particles in the atmosphere or the activities of excited rain gods, one answer was as good as another in the absence of any test of validity. Thus, virtually any answer was tenable and provided ego nourishment hundreds of thousands of years ago. Not only did answers abound, but methods of controlling phenomena, though perhaps ineffective, proliferated. Singer and Bernassi (1981) report that superstitious behaviour and occult beliefs are inversely related to the knowledge and predictability of the environment, and Malinowski (1954) notes that the Trobriand islanders display no superstitious behaviour when fishing in a familiar and safe lagoon, but resort to various rites when fishing in the dangerous open sea. Gods or forces were created for every unpredictable phenomenon — rain gods, fertility gods, harvest gods, war gods, etc. — and rites were invented for controlling the activities of these forces.

Accomplishments were not limited to the understanding of natural phenomena and events. Ludic behaviour could also bring approbation. Dancing, storytelling, singing, acrobatics, or drawings could serve to enhance one's stature and reputation, particularly since what is a good dance or picture or story is subject to more varied interpretations than what constitutes a good fire. Martin Luther admonished Copernicus: "He who wants to be clever must invent something all his own, and what he makes up he naturally thinks is the best thing ever" (White, 1896, p. 126).

What happens when clear or partial evidence is presented which shows that an individual's answers are incorrect? Such a blow to one's ego would be extremely painful. It is suggested that the same thing happened in evolutionary times as happens today. The evidence, if possible, is ignored, distorted, or denied. For example, the Catholic Church is still studying (in 1987) the Galilean heresy, and litigation is still in the courtrooms concerning the teaching of evolution. Humans, to this day, do not easily relinquish their answers. Virtually all of Freud's defence mechanisms involve an attempt at distortion of any informational input which threatens one's self-image or self-esteem.

In a sense, one could describe this distortion of informational input in terms of the difference between sensation and perception, with the former defined as the experiences generated by the raw stimulus and the latter reflecting the experiential interpretation generated by the sensory input. These kinds of psychophysical relationships are highly idiosyncratic in humans. The high variability stems from the variability inherent in perception. Even with physical pain, detection thresholds vary little across individuals. It is the tolerance thresholds that are remarkably

variable. Thus, with the sensory component relatively constant, the agony, or emotional component, is highly variable. As a result of this, Crue, Kenton, Carregal, and Pinsky (1983) suggested that "pain (both acute and chronic) is a central perception and *not* a primary sensory modality (sensation)" (p. 16). If this is true of physical pain, it is probably even more true of the psychological pain that obtains when one's answers are found to be incorrect or are simply not admired. Thus, for those whose efforts did not arouse the admiration of others, distortion sustained their egotism until such time as they might finally attain the necessary level of accomplishment.

The Role of Narcissism in Pairbonding

Perhaps the most important consequence of egotism was that it resulted in a dramatic change from the mating pattern of other primates. Like most mammals, primates usually form polygamous groups in which a male mates with several females. There are certain disadvantages of such a system. First, genotypic variability is limited if one male makes the major contribution to the gene pool. Secondly, this system sometimes leads to highly aggressive competition between males, resulting in a dominance hierarchy in which the majority of males have a low probability of reproduction. Even when males low in the hierarchy are allowed to copulate with females (e.g., in the savannah baboon), the higher ranked baboons receive priority and may have exclusive access during ovulation (Packer, 1979).

Most primates exist in groups. However group living is not automatically advantageous. Noonan (1987) points out that group living may have as many built-in drawbacks as it has specific benefits. While on the one hand it may provide a better defence against predators, result in cooperation in hunting, and generate a better defence against human enemies, on the other it "automatically intensifies all kinds of competition for the resources of reproduction, including food and mates" (p. 30). Noonan suggests that, as a result of this intragroup competitiveness, "an unawareness and even denial of one's own competitive goals may have been favored by selection by allowing individuals to cheat more effectively" (p. 38). Similarly, Trivers (1976) argues that "the conventional view that natural selection favors nervous systems which produce even more accurate images of the world must be a very naive view of mental evolution," (p. viii) supporting the view that Freudian-like mechanisms of perceptual distortion evolved concomitantly with the evolution of a narcissistic state.

Noonan (1987) notes that group living probably had a dramatic effect upon the natural selection of subsequent human behaviours, since ostracism or rejection by the group would decrease reproductive success. She argues that

> If group living was a prerequisite for reproductive success during human evolution, then the importance of group-effectiveness and the threat of expulsion would have placed limits on how directly individual competition could be expressed. Sensitivity to others and eagerness to win their approval and admiration would have been reproductive assets. (p. 31)

The evolution of a narcissistic state would generate precisely these reproductively advantageous behaviours. Perhaps equally important, these behaviours provide, as shall be seen, the mechanisms for relatively noncompetitive pairbonding in humans.

Although most contemporary human societies are polygamous, it is generally accepted (Wilson, 1978) that humans in the hunter/gatherer era nearly universally pairbonded with the husband and wife forming the nucleus of extended families. Because the human female has a much longer breeding interval than the male, Wilson contends that the pairbond was "attenuated somewhat by the common practice of polygyny" (p. 140).

What are the selective pressures that make the human male more necessary to the survival of the offspring than the chimpanzee male? The consensus is that the long breeding and dependency period of the human offspring requires a monogamous relationship. The behavioural repertoire that human infants require to cope successfully with the environment is, for the most part, not innate; it must be learned. Moreover, it must be learned from both parents, the proportion to be learned from each parent perhaps being dependent upon the (unpredictable) sex of the infant. Thus the continued presence of both parents increases the probability of the survival of the parental genes.

What are the mechanisms that evolved for initiating and maintaining a monogamous relationship? Some have suggested that cooperativeness evolved, resulting in pairbonding. Others

have suggested that humans pairbond because the sexual activities are so rewarding they are self-perpetuating. However, there is no available evidence that cooperative or sexual activities are more rewarding for humans than they are for other nonmonogamous primates or mammals.

Related to this is the puzzle with respect to the identification of the selection pressures for the disappearance of external signs of ovulation in the human female. In *Woman the Gatherer*, McGrew (1982) suggests that the male hunter presented the female with food when observable signs of ovulation were present and that, therefore, females received more nourishment when the signs of oestrus dropped out. But, if such stimuli as reddened tissue elicited food-giving behaviour, it would seem that females would receive less food when these signs were not present. Other hypotheses have been offered by Alexander and Noonan (1979) and by Burley (1979). As Hrdy (1981) has pointed out, however, none of the available formulations seem to account for "solicitations of males by nonovulating females among primates which are *not* pairbonded, *not* living in a communal context, *not* sufficiently aware for birth control to be a possibility" (p. 144).

In addition to the question of what the mechanism is for pairbonding in humans, there is also the question of the determinants of specific pairbonds. Why does individual X form a relationship with individual Y? How do humans select specific mates? What are the criteria for pairbonding?

Symons (1979, p. 143) appears to agree with Darwin, who felt that human male sexual selection was based upon physical attractiveness. But what is physical attractiveness? Even with agreement on attractiveness, the results would differ depending upon what proportion of the population was viewed as attractive. If the overwhelming majority of a population had characteristics which were perceived as attractive, we would essentially be dealing again with a random selection procedure. If only a few were viewed as attractive, aside from the fact that the majority of nubile females would not fulfill their reproductive function, the competition for the attractive females would probably result, via aggressive behaviour, in the elimination of a considerable number of male potential contributors to the reproductive cycle.

The hypothesis proposed here is that a selection mechanism that generated the maximum possible individual male/female pairings would increase the relative fitness of each individual. Just as the wiring of idiosyncratic appetites (mentioned above) for tomatoes, cabbage, lettuce, etc. would increase relative fitness by decreasing the competition for environmental resources, idiosyncratic appetites with respect to reproductive partners would increase relative fitness by reducing competition for mates. As a consequence, genotypic variability is also maximized. It is further proposed that the development of egotistical feelings, of a narcissistic self-love, provided the impetus for the operation of the mechanisms which generated pairbonding in humans.

Two principal means of nourishing egotism have been noted previously: One, to acquire, to communicate, and to demonstrate knowledge not possessed by others; another, to develop new forms of ludic behaviour. There is a third means of asserting one's superiority. It again involves doing and obtaining things that others lack. McGrew (1982) contends that early females bonded themselves sexually to males when the latter were willing to assist in childrearing, in the sharing of meat, and in the protection of a female's offspring. She takes the position that "these forms of assistance developed from haphazard sharing and the general protection of all young" (p. 65).

If there is any continuity between the psychological profiles of early hominids and contemporary ones, such behaviours can just as easily be interpreted as reflecting narcissism. "I am so successful at obtaining food that I have a surplus to give to you." "I am so powerful that no one would dare bother you or your children." Doing extra things for others and being able to do things that others cannot do are behaviours that sustain self-perceptions of superiority. The recipient of this behavioural largess, although it may be randomly initiated and directed, receives a substantial ego-morsel. "Someone has chosen to give food to *me*. It must be a tribute to my attractiveness, my superiority over the others."

This type of tribute cannot occur if the donor is perceived as an unattractive individual. A friendly overture from a source perceived as inferior might be construed as an indication that the person receiving the compliment was also perceived to be in the class of inferiors. Conversely, a compliment from an individual of exceptional qualities and characteristics increases the potency of the tribute. Because of this,

positive perceptual enhancement of the characteristics of the donor immediately and automatically occurs, so that ego nourishment is maximized. In the absence of any overwhelming and irrefutable evidence to the contrary, humans project onto virtually anyone who pays them more than the slightest attention the most laudable traits possible. With each ego-morsel received, more and more beauty is discovered in the same unexceptional face, more and more humour in previously unnoticed remarks, more and more charm in formerly unextraordinary people. The more attention one receives, the more it is obvious that the person bestowing these compliments must be wonderful, sensitive, and discriminating.

The acceptance of meat, help, or grooming behaviour is also an ego-morsel for the donor, for such offers can be rejected as an indication of the donor's unattractiveness and inferiority. And the value of this ego-morsel is magnified by the donor by positively enhancing the attractiveness of the beneficiary. In this way, each of the individuals involved in the transaction receives nourishment for their narcissism, and each enhances the tribute received by increasing the other's attractiveness through positive perceptual distortion. If rejection does occur, negative perceptual distortion occurs, and the qualities of the potential beneficiary are immediately minimized to protect the donor from a psychologically painful input.

As previously noted, egotism is insatiable. A constant stream of the same compliments results in progressively diminishing nourishment. Greater and greater tributes are required to nourish an insatiable narcissism, and the degree of positive distortion increases at each step of the escalating ladder of tributes. Thus, the climb up this ladder of tributes results in a dramatic and progressive reciprocal distortion of the attractiveness of the individuals involved in exchanging these compliments. This change, from stimulus control of pairbonding to subjectively defined (distorted) attractiveness, results in the maximum number of possible pairings in a population, dramatically increasing genotypic variability and simultaneously decreasing sexual competition.

The need for greater and greater tributes may have contributed to the evolution of steps involving behaviours which were not previously in the repertoire of the species. The creation of such new steps would, itself, be indicative of a superior individual. Giving meat, helping with childcare, and protecting the young may have quickly become rather unextraordinary gifts. Therefore, another selective pressure for the development of language, which made verbal compliments possible, was the drive to outdo the competition in bestowing greater and greater compliments. Other intermediate steps which may have been created or adapted from other relationships may have involved kissing, holding hands, etc. Finally, a change in the role of the female in sexuality provided the greatest tribute to the male's narcissism: the "giving" of sex. No longer was sex dependent upon tissue coloration or peritoneal swelling. The external signs of oestrus dropped out, and sex became a gift which could be conferred at any time.

In *The Descent of Woman*, Morgan (1972) notes that we tend to call the areas involved in human sexual stimulation erogenous zones as though "they had evolved for one purpose alone, and that one Eros." She contends that, with the loss of stimulus control over copulatory behaviour, making lovemaking voluntary, signals and gestures were borrowed from other types of relationships (e.g., familial, parental) in order to reduce hostile responses to sexual advances. Morgan argues that sex is less specifically copulative and more an expression of fondness or love (p. 111). In this way, egotism again increased relative fitness. Those individuals in the population who were not endowed with this insatiable narcissistic need were not rewarded by complimentary behaviours from other individuals, and therefore neither positively enhanced the attractiveness of the donor, nor reciprocated with ego-morsels.

Insatiable narcissism demands greater and greater tributes. As a result the "madness of love" which cements a monogamous relationship provides a rather temporary bond. The reason is that at the height of the madness of love the partners offer each other the ultimate tribute. In prehistoric or evolutionary times, the greatest tribute may have been living in the same cave. In modern times, it may be a signature on a legal document, testifying that not only are we attractive now, but that we are so attractive that someone wants to spend the rest of their life, and perhaps afterlife, with us. What greater tribute could be offered? And therein lies the paradox. The giving of the ultimate tribute precludes any further testimony to our attractiveness. The need for ego-morsels, being insatiable, continues but can no longer be fulfilled. As a result, the

escalating steps of tributes to our attractiveness drop out and so does the positive perceptual distortion accompanying each level of increasing tribute. As a result, mates gradually perceive each other as the rather unextraordinary individuals they were prior to the first exchange of ego-morsels, contributing to the extinction of the romantic feelings and behaviours. It is probable that in evolutionary times, as now, deteriorating romantic relationships were replaced with ones which renewed the supply of ego-morsels. This type of "serial monogamy" or polygamy seems to describe the actual behaviour of humans more accurately than the idealized portrait of monogamy that is presented by some as the human norm.

The Incest Taboo

The foregoing analysis may be appropriate not only as an explanation of pairbonding in humans, but also as an explanation of the incest taboo. In most cultures there is a preference for outbreeding versus incest. In the language of "epigenetic rules" and "culturgens," Lumsden and Wilson (1983) attempt to explain the incest taboo by reconstructing a primitive tribesman's reasons for opting against an incestuous relationship. Ultimately, incest is rejected because of guilt and the imagined impact of such an act upon others. Even if one accepts epigenetic rules, this scenario seems to be questionable. Guilt and the negative reaction of others cannot be the cause of any innate preference against incest, unless they are wired-in; but this does not seem to be what Lumsden and Wilson are arguing, since their fictional tribesman "weighs" the perceived emotional consequences of his competing urges and "guesses" the effect on "the minds of others." From the point of view adopted here, it seems probable that the same mechanisms which result in pairbonding also inherently tend to minimize incestuous relationships. The kind of perceptual enhancement described above as being essential to normal pairbonding is virtually impossible to obtain if the relationship involves people who have been intimately reared together. Confirming the Westermarckian view, "Familiarity breeds sexual disinterest," there is too much contradictory information accumulated during such a close relationship for the necessary positive perceptual enhancement to be able to operate. To paraphrase George Bernard Shaw, "Love consists of overestimating the difference between one person and all others." Such overestimation is virtually impossible with a constant input of contradictory information. The incest taboo may therefore be an instance of the general case whereby familiarity breeds sexual disinterest. This conclusion is supported by finding that nonrelated children raised together in an Israeli kibbutz virtually never married each other (Shepler, 1983). Therefore, there would appear to be no need to invoke unique mechanisms to account for the incest taboos, since the normal mechanisms for pairbonding seem to be clearly sufficient.

Summary

In this article, it is argued that human evolution entailed the emergence of adaptations that subserved a psychological need labelled egotism or narcissism. The principal means of nourishing narcissism are (a) to acquire, communicate, and demonstrate knowledge not possessed by others, (b) to develop new forms of ludic behaviour, and (c) to do and obtain things that others lack. It is argued that the evolutionary development of egotistical feelings, of a narcissitic self-love, provided the impetus for the operation of the mechanisms which generated pairbonding in humans, and that these same mechanisms can also account for the incest taboo.

RÉSUMÉ

Cet article cherche à intégrer les concepts psychologiques à la théorie sociobiologique, tel que l'avait suggéré Leak et Christopher (1982) et Daley et Wilson (1983). Dans *Promethean Fire,* Lumsden et Wilson soutiennent que quelque chose d'étrange et de puissant avait empêché l'évolution des espèces sous-humaines. L'article suggère, au contraire, que quelque chose d'élaboré et d'amplifié s'est produit dans l'évolution humaine qui a propulsé notre espèce de l'autre côté du gouffre lui donnant l'intelligence qui la distingue de ces prédécesseurs évolutionnaires. Les animaux non-humains dépendent d'adaptations dont les fonctions primaires sont asservies aux besoins physiques. Par contre, l'évolution humaine a entraîné l'émergence d'adaptations qui sont asservies à un besoin psychologique. Ceci comporte le maintien de l'équilibre homéostatique d'un état psychologique, désigné sous

le nom égotisme ou narcissisme qui (a) engendre des comportements d'exploration, conduisant au contrôle de quelques aspects de la sélection naturelle et (b) apporte un changement dans les mécanismes et les formes de l'appariement, par rapport aux autres primates. Contrairement à l'opinion de Lumsden et Wilson, cet article explique à la fois l'appariement et le tabou de l'inceste en utilisant les mêmes mécanismes.

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