Evolution of the Symbolic Self:
Issues and Prospects

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The construct of self is indispensable to psychology. Research on the self has increased threefold in the past 30 years, far exceeding the growth rate of published research in psychology as a whole (Tesser, 2000). It is astounding to realize that one out of seven recently published articles in psychology examined aspects of the self. This figure is even more impressive in light of the fact that it does not include research on the construct of "Identity." The timely publication of this volume reflects this impressive growth and affirms the centrality of the construct of self (and identity) for

psychology and, indeed, for all the social sciences.

The contributions in this volume document the pivotal role of the self in human functioning, both within psychology (e.g., social and personality, developmental, clinical, cognitive, comparative) and within other social science disciplines (e.g., sociology, anthropology). This chapter complements these contributions by taking an evolutionary perspective on the self. We conceptualize the self as an evolutionary adaptation. We explore ideas concerning the temporal ori

gins of the self, the evolutionary pressures that led to the emergence of the self, and the functions of the self-functions that led to its maintenance, propagation, and continued evolution.

We begin with a word of caution: Our evolutionary accounts, both past (Sedikides & Skowronski, 1997, 2000; Skowronski & Sedikides, 1999) and present, leave us with a persistent sense of ambivalence. Because the ecological and social environment (i.e., social organization) in which our forebears lived have left very few high-definition imprints, it is difficult to grasp the magnitude of the evolutionary forces that acted on them. Unlike laboratory experimentation, in which the implications of the accumulated evidence can be clear, our struggle to understand how the self has been shaped by evolution has led us to the uncomfortable realization that the evidence is weak or even contradictory. Hence, we admit that the state of the current evidence is such that alternative accounts can be written about how, when, and why evolution has shaped the self. The challenge, then, for us and for

colleagues who approach the self from the standpoint of evolutionary psychology is to rigorously police our perspectives in trying to determine those ideas that are scientifically plausible and those that are not.

Of course, we attempt to refrain from giving an utterly implausible account. We devote the first section of the chapter to definitional clarifications and to an exposition of a plausible evolutionary timeline for the species under consideration, Homo sapiens. In the second section, we present parts of our account as a set of unresolved issues. Throughout both sections, we discuss elements of the uncertainty that we feel in our evolutionary exposition.

Definitional Clarifications

We are concerned with the evolution of an apparently unique human characteristic, the symbolic self. Even here, our self-confessed uncertainty emerges: Is the symbolic self truly unique? The story of evolutionary theory is littered with examples of characteristics that were thought to be unique to humans (e.g., tool use, higher cognitive functions such as mathematics and language). In at least some cases, the motive behind these exceptions was to separate humans from the so-called 1ower animals." We have no such motive. Instead, we believe that there is a fundamental continuity between related species and that one consequence of this continuity is that an attribute rarely arises de novo, out of nothing. Instead, evolution often proceeds by reworking, amplifying, or diminishing existing characteristics. One implication of this principle is that a researcher ought to be able to find evidence of a self in other species, especially in those species that are close to humans on the bush of evolution. Indeed, evidence suggests that some animals (e.g., chimpanzees) do possess rudimentary forms of a self-concept. However, the evidence also currently indicates that the self-concept that has emerged in humans is different from that observed in other species-both quantitatively and qualitatively (see Sedikides & Skowronski, 1997, for a more detailed discussion).

What is the human symbolic self? The symbolic self can be thought of as a dynam

ic system with at least three important capacities (Sedikides & Skowronski, 2000). One capacity is its representational ability. The symbolic self serves as the repository for mental representations of a person's attributes, which can range from abstract (e.g., knowledge about one's own typical responses to situations) to concrete (e.g., critical and temporally located episodes in one's life; Skowronski, Betz, Thompson, & Shannon, 1991) and from negative to positive (Staats & Skowronski, 1992). Additionally, these representations can extend into the future (e.g., goals) and can be metacognitive (e.g., beliefs about how others might perceive one's behavior). In short, the representational capacity of the symbolic self stores the essential library of an individual's past and present and is the repository for an individual's aspirations.

The second capacity of the symbolic self concerns its executive or agentic function. We have proposed three classes of motives as the fundamental forces that guide this executive function (Sedikides & Skowronski, 2000): valuation (i.e., protecting and enhancing the self), learning (i.e., pursuing a relatively accurate image of the self, improving skills and abilities), and homeostasis (i.e., seeking and endorsing information that is consistent with the self). These motives have several consequences. For example, the executive function of the symbolic self can instigate information-seeking behavior (e.g., pursuing feedback that will stabilize the representational component, drawing inferences about others) or choice behavior (e.g., goal setting, attempts to control outcomes). Additionally, the symbolic self can provoke defensive responses to unfavorable feedback through such strategies as rationalization or derogation. The symbolic self can also instigate the experience of positive emotions (e.g., pride, high selfesteem) in response to favorable outcomes and the experience of negative emotions (e.g., shame, guilt, or embarrassment) in response to unfavorable outcomes. In summary, the executive and regulatory capacity of the symbolic self renders it a potent initiator, mediator, or moderator of an individual's thinking, feeling, and behaving.

In agreement with Damasio (1999), we believe that to be conscious means to have a sense of the self. Hence, the third capacity

of the symbolic self is its reflexive potential. This is the organism's ability to depict itself in its ongoing relation with other objects. This reflexive potential is manifested in continuous interplay between the representational and executive functions of the symbolic self. For example, the symbolic self's reflexive potential allows the organism to modify long-term goals so that those goals are congruent with anticipated environmental changes. Furthermore, a by-product of this interplay is the working self, which consists of self-knowledge that is momentarily accessible in working memory. Situational features and situation-specific goals set by the executive system can cause the working self to vary. Thus the reflexive characteristic of the symbolic self allows the self-system to respond flexibly and dynamically to environmental contingencies by selectively activating or deactivating aspects of stored selfknowledge. However, this is not to say that the reflexive potential of the symbolic self is unlimited. Biological constraints or past learning history may cause some aspects of self-knowledge to be more easily accessed than others or to be in a chronic state of activation. Hence, an individual may show some evidence of consistency in goals or behaviors across situations despite the diverging demands that different situations might place on the self-system. Nonetheless, its reflexive potential allows the self some measure of flexibility in determining which goals will be pursued and how they will be pursued in any given situation.

Timeline 6r Human Evolution

We next offer a timeline for the emergence of the Homo sapiens species, a necessary backdrop for understanding when the symbolic self has emerged in our evolutionary ancestry. As befits our introductory remarks about uncertainty, we emphasize that this is only one of several plausible timelines that a theorist might be able to concoct from the available data. However, we also note that the timeline of human evolution that we offer is, indeed, a plausible one: In fact, it is arguably the most plausible timeline in light of the evidence collected so far (McKie, 2000).

Our timeline is straightforward. Approxi-mately 6 million years ago, one group of hominids became reproductively isolated from an alternative line of great apes that led to chimpanzees and bonobos. Between 3.8 and 5.5 million years ago, these isolated hominids evolved into several species of bipedal African apes of the genus Australopitbecus. The principal species were Australopitbecus ananiensis, Australopithecus afarensis, and Australopithecus afficanus. The members of these species were approximately 4 feet tall, had ape~sized brains, exhibited a vegetarian lifestyle, and lacked stone tools. In this last case, it is probably best to say that there is currently no evidence of stone tool use (e.g., shards, scraping patterns) for members of these species.

Between 2.5 and 3 million years ago, global ecological changes (i.e., a general cooling of the climate) and a decline in the amount of forested area available induced some of these early hominids to move from an arboreal lifestyle to a savannah (a mix of grasslands and trees) lifestyle. By this time, the Australopitbecines had essentially given way to a new genus, Homo. Several species of Homo (Homo rudolfensis, Homo habilis, Homo erectus)-along with Australopethicus boseii-apparently coexisted in East Africa. Other Homo species thrived in South and North Africa. These early Homo ancestors had a larger brain and physique than the early Australopithecines and used stone tools.

By 1.8 million years ago, one of the East African four, Homo erectus, showed evidence of several lifestyle changes that were congenial to a savannah lifestyle. These changes included an omnivorous diet. In addition to consumption of fruits, insects, and greens, this diet included tubers and meat. Such a diet provides two elements that are critical to the evolution of a larger brain: the nutrients that are necessary to support the construction of an enlarged brain and the energy to run it. If the processing power conferred by larger and more complex brains granted an evolutionary advantage (as opposed to the construction of larger and more complex bodies), then individuals who were born with the means to make such enlarged brain structures should have been favored over those who could not. The physiological mechanism to accomplish this task of trait selection may have been neote

ny: slowing the maturation rate of several different aspects of human development relative to the rate of growth of the brain. This larger-brained (relative to body size) Homo erectus was successful enough to have spread across Africa.

Between 200,000 and 300,000 years ago, as the process of speciation continued, Homo sapiens appeared on the scene. This species, the modern humans, had an unusual confluence of characteristics (Foley & Lahr, 1997; Klein, 1989; Stringer & McKie, 1996). The species members had large brains (nearly three times as large as the australopithecines, adjusting for differences in body size) and a relatively tall and strong physique. The species also had an array of powerful cognitive capacities, which included symbolic communicative abilities and abstr iact thinking. An example of this capability is that the species used purpose-built tools, and refined those tools. Homo sapiens also showed evidence of complex social organization, relatively sophisticated cultural practices, and a penchant for relentless networking and expansion. Current DNA and anthropological evidence indicates that this species poured out of Africa and populated much of the rest of the world. The evidence also suggests that Homo sapiens replaced indigenous hominid species in Europe (i.e., Neanderthals) and Asia (i.e., a population of erectus-like species in Java) either by displacing them (i.e., taking over their habitats) or, less frequently, obliterating them. There is currently no convincing DNA evidence supporting the notion of successful interbreeding among Homo sapiens and other hominid species. By roughly 30,000 years ago, Homo sapiens was the only Homo species found on earth.

When in this hypothetical timeline did the human capability for self-representation evolve? Because evolution is a continuous process, exact dates are obviously difficult to discern. Nonetheless, in our prior work (Sedikides & Skowronski, 1997), we associated the origin of a rudimentary human selfconcept with the appearance of Homo erectus in the late Pleistocene epoch. This species had been subject to strong evolutionary pressures that accompanied the movement from the forests to the savannah grasslands. In addition, a relatively large brain, a hunting lifestyle, and a structured

social organization characterized Homo erectus. Furthermore, an expanded and lowered pharynx, which is a physiological necessity for complex articulate speech, had evolved by late Homo erectus. This development suggests that Homo erectus was a species for which communication was important. In our view, the combination of burgeoning cognitive capacities, the ability to produce elaborate communications, and an intricate social structure is a combination that is well suited to the evolution of a sense of self. Given the confluence of these characteristics, the late Pleistocene seemed like a reasonable bet as the period in which a rudimentary human capacity for a self-concept emerged.

However, this likely represented only the first relatively primitive glimmerings of the human ability to cognitively represent the self. If this self-representational ability did indeed enhance fitness in the environment, evolution certainly would have worked to amplify this characteristic with the passage of time. Can we identify a more recent time period during which artifacts point to the presence of the symbolic self in Homo sapiens? Considerable controversy surrounds such a date (Leary & Cottrell, 1999), although the issue has been addressed indirectly rather than directly. One argument is that the symbolic self was manifestly present 30,000 to 60,000 years ago, as evidenced by burials, personal adornment, and representational art (Mithen, 1996). Another argument is that the symbolic self was not present until approximately 10,000 years ago, as evidenced by a lifestyle that was characterized by delayed-return contingencies (e.g., the ability to temporally disentangle one's purposeful efforts from its intended consequences), such as dependence on agricultural subsistence (Martin, 1999). A third argument is that the symbolic self was not present until as recently as 2,800 to 3,000 years ago and coincided with such cultural innovations as religion, abstract art, philosophy, and science (Jaynes, 1976).

Our own inclination (in agreement with Leary & Cottrell, 1999) is to use the earliest of these dates, but we admit that this choice is as much a reflection of personal prefer~ ence as it is a reflection of the evidence. It seems to us that the features cited by Mithen 119,96), such as personal adorn

merit, are difficult to imagine in the context of an organism without a well-evolved symbolic self. Why would an organism without a well-evolved symbolic self waste time and resources creating and wearing items that do not have any apparent function other than to convey status to conspecifies or to make the wearer feel good about him- or herself? Skeptics might reply that such "unnecessary" created or adopted adornments are found in animals that possess only a rudimentary capability for distinguishing between the self and the external world (e.g., the bowers of bower birds, the shells of hermit crabs). Male bower birds, for example, will create relatively elaborate bowers for the purpose of attracting a female mate. We recognize the validity of such counterexamples but would still argue that it is the breadth of the behaviors described by Mithen that is persuasive to us. A theorist might be able to generate specific evolutionary-based explanations (e.g., sexual selection) for specific behaviors, such as adopting adornments, but it strikes us as difficult to use such explanations when an array of behaviors that seem to have a multitude of purposes (adornment, representational art, burial) emerges-an array whose purpose can seemingly be easily understood by presupposing a sense of self.

Why Has the Symbolic Self Evolved in Humans?

Evolution does not occur in a vacuum: Existing genetic variations among species members are selected by environmental pressures. Hence, the timeline that we have proposed needs to be tied to these selection pressures. Given the timeline that we have established, what are the selection pressures that could have worked toward the evolution of the human symbolic self? In light of the fate of other related species, this is an intriguing question. For most of its evolutionary past, Homo sapiens cohabited with more than 20 Homo species. Yet, it is now the sole Homo species remaining. We speculate on the reasons for this curious state of affairs, beginning with a summary of the selection pressures that the species likely endured. More specifically, we review two broad classes of selection pressures: ecologi-

cal and social (Sedikides & Skowronski, 1997).

Ecological Pressures
One idea that serves to explain the emergence of the self is that the self is a natural by-product or consequence of the expansion of cognitive abilities that has characterized the evolutionary line leading to modern humans. Numerous studies suggest that the emergence of cognitive abilities (among which we include the capacity to construct a self) is related to selection pressures revolving around, and stemming from, food acquisition. For example, among frugivore (fruit-feeding) primates, the irregular distribution (both temporal and spatial) of food supplies is linked with larger brain-to-body ratios. In addition, omnivorous foragers (i.e., those that feed on both animal and vegetable substances) have the largest brain-to-body ratios among primates. Such findings are intriguing given that our evolutionary ancestors had to make a change from an arboreal (and presumably largely vegetarian) lifestyle to one that was suited to life on the savannah. The new lifestyle included an omnivorous diet and food sources that were distributed widely in time and space. Why is difficulty in locating food associated with bigger brains? Larger brains provide the processing capacity necessary to complete the difficult and varied tasks associated with the omnivorous habit of the human ancestors. For example, enhanced memory and categorization processes facilitate locating and recognizing food sources, and heightened spatial memory and cognitive mapping facilitate effective food search. Handling, processing, and storing food can be enhanced by strengthening cognitive representation abilities and the capacity to anticipate future events.
Furthermore, the challenges associated with hunting may have added to the selection of cognitive abilities by evolution. Effective pursuit in hunting presupposes accurate perception of fast-moving prey, accurate mental orientation and rotation, rapid recognition and taxonomic memory, as well the ability to act quickly. Approaching game closely and being competent in stalking requires sophisticated planning and

ecision-making abilities. Finally, planning an optimal route of attack necessitates the capacity to remember the history of encounters with specific prey and the capacity to imagine how such prey might react to an attack in these new circumstances.

More important, ecological pressures associated with finding and handling food may have prompted the emergence of symbolic reasoning by the time that Homo sapi . ens emerged. Effective remembering, imagining, and planning involve symbolic reasoning: the capacity to think by manipulating images or concepts. Similar mental skills are involved in tool construction and use. For example, excellence in flint knapping (i.e., shaping the flint by breaking off pieces with quick blows) presupposes planning and imagination while working the stone, and developing optimal shapes for the flints requires knowledge about the effectiveness of different flint shapes and their potential functions in hunting.

We argue that the symbolic self evolved as an additional way to enhance responding to these food-related selection pressures. Thanks to the representational (e.g., memory for past achievements, storage of future expectations) and regulatory components of the symbolic self, in the presence of such a self humans were better able to make critical decisions, such as choosing a good hunting route or an effective food distribution strategy. Additionally, the reflexive capacity of the symbolic self allowed humans to consider long-term plans, to gauge whether these plans matched the needs of the present self, to simulate the results of alternative plans on the basis of expected utility, and to take action based on the results of those simulations (e.g., set goals). These processes led to the formation of a concept of selfhood. Humans presented this concept to others, expected others to concur with it, were inclined to believe that others did concur (a process that we term "projected appraisal"), and expected others to confirm this self-conception.

In this context, emotions become a potentially important source of feedback and subsequent motivation. Feelings of happiness result from goal attainment, and the type of match achieved between the organisms' objectives and their achievements is critical for feelings related to the private self. Self

esteem (i.e., one's evaluation of or liking for the self) or pride can be high when the match is successful. On the other hand, low self-esteem, dejection, or shame can result when the match is unsuccessful (Tangney, Burggraf, & Wagner, 1995). This function of self-relevant feelings can confer crucial evolutionary advantages. Not only can such feelings provide immediate feedback regarding the attainment of one's goals, but they can also affect subsequent goal-directed effort.

In summary, the ecological-pressures perspective offers a linear account for the evolution of the symbolic self. According to this perspective, the symbolic self (1) was derived largely from the complex interactions that hominids had with their changing habitats; (2) was a function of symbolic abilities that emerged in response to environmental demands; (3) was formed as a private selfconstruction; (4) was communicated to conspecifies through the mechanism of projected appraisal, thus producing the public or social self; and (5) included achievementbased self-feelings (i.e., self-esteem, pride, shame).

Social Pressures

Given that the self is actively involved in humans' social lives, consider the possibility that the social lifestyle adopted by humans played a role as a selection pressure in the continuing evolution of the self. According to this social-pressures perspective, the evolution of human cognitive abilities (and, by extension, the symbolic self) has been prompted or aided by the social habit of humans' ancestors. It is certainly the case that, from an evolutionary perspective, membership in social groups comes with both pros and cons. Among the direct benefits are improved predation (e.g., hunting efficiency, food sharing), reduction of predation risk, and cooperative defense of essential resources (e.g., food sources and mates) against rival groups. However, one other apparent consequence of group living in terrestrial primates is its relation to thinking prowess: Group size in terrestrial primates is positively associated with brain size, even controlling for lifestyle differences (e.g., diet).

One can speculate that this association

Might be attributable to the cognitive demands of within-group interactions. These demands are a function of the complexity of a group's social organization and the roles, rules, and relationship patterns that exist within that organization. Humans seem to be prone to peculiarly complex patterns of interactions and social relationships. For example, consider group hierarchical status. In some animals, status is straightforward: One learns and knows one's place in the pecking order, and that status typically changes only with the death of a higher ranked member of the group. Such rigid status hierarchies do not seem to call for much cognitive firepower, aside from a bit of memory. In contrast, status hierarchies in humans do not exhibit this rigid quality. Human status hierarchies are loose and free-flowing and seem to be easily modifiable depending on circumstances, such as coalition formation and change.

This flexibility in status would have placed cognitive demands on our evolutionary forebears. Group members would have been uncertain about their relative standing and would have needed to engage in numerous cognitive tasks to discern their current status. These tasks included paying attention to the situation, decoding others' nonverbal signals, guessing their intentions, and remembering the history of past interactions with each group member. In addition, such interactions are multifaceted and governed by numerous rules. Cooperative interactions (e.g., feeding, grooming, fighting) can be based on relationship type (e.g., kinship, friendship) and on several preconditions, such as role differentiation (i.e., in terms of status or division of labor), effort coordination, conformity, loyalty, and fear of social exclusion. Likewise, competitive interactions (e.g., intrasexual competition for suitable mates) can pose several cognitive demands on the human mind, such as remembering and recognizing one's own and others' social ranks, monitoring competitors' ranks, deceiving higher ranked competitors, monitoring the sexual receptivity and fitness of potential mates, exhibiting physical and social prowess in an effort to attract potential mates, safeguarding (on the part of females) against male attempts at

forced copulation, cheating, and detection of cheating.

Clearly, in such a challenging environment it is beneficial to be cognitively proficient. Such proficiency allows individuals to engage in a constant, elaborate, and everchanging cost-benefit analysis of whether to stay in the group, form a coalition, or exit the group for the sake of joining another. In such an environment, it is easy to see how the demands of the social context acted as a selection pressure that spurred the cognitive capacities required for the construction of the symbolic self.

Additional cognitive demands (e.g., maintaining a level of alertness, defending offspring and territory, initiating hostilities at an opportune time) are placed on individuals when intergroup competition occurs. Thus, in addition to a need for the individual to function well within a group context, it makes sense that individuals would be well served if their group also functioned well. High levels of group performance might sometimes be increased by factors that enhance the coordination among group members. Hence, various mechanisms may have evolved as a way to facilitate group function via enhanced coordination. For example, researchers in developmental psychology have suggested that mimicry may be a consequence of innate imitative capabilities (Nadel & Butterworth, 1999), and recent research examining the "chameleon effect" demonstrates that people will nonconsciously mimic the behavior of others (Chartrand & Bargh, 1999). Such mimicry serves to coordinate people's actions and to promote interpersonal bonds. This principle of coordination extends to the self. Coordination can be facilitated when an individual's self-concept is in agreement with the other group members' perceptions of that individual. Coordination can also be achieved via the process of reflected appraisal: An individual assimilates the perceptions of others so that those perceptions become integrated into the self. Humans' linguistic capabilities are well suited to this process of reflected appraisal ("Here's what I think of you. . ."). Such appraisals can obviously have emotional consequences, so it makes sense that self-related feelings partially stem from such

social feedback. In fact, some authors speculate that self-esteem has evolved as a so~ ciorneter (Leary, Tambor, Terdal, & Downs, 1995), a running gauge of others' evaluations of the self. In addition, self-esteem can serve as an important cue for the organism's ever-changing ranking in the group, thus instigating dominance or deference behavior (Barkow, 1989). Other self-feelings can also fulfill social functions. For example, embarrassment promotes the appeasement of group members after an occasional transgression (Keltner & Buswell, 1997), guilt motivates an individual to assure group members that a desirable change in his or her behavior is in the offing (Tangney, 1998), and shame can lead an individual to barric.ade the self from the social environment in an effort to minimize further failure and debilitating defeat and to regroup (Weisfel & Wendorf, 2000).

Reflected appraisal is not the only mechanism available for producing similarity between Self-appraisals and others' appraisals. For example, individuals might come to reflect hypothetically on how others might think about and respond to the individual's behavior via processes such as perspective taking and role taking. Using these processes ' individuals can run mental simulations in which they imagine how others can and might perceive them under various circumstances. Based on such thought processes, individuals can consider others as organisms like the self, attributing intentions to them, and, more generally, attributing cognitive and affective states to them.

Group living may have rnolded the social construction of the self in another critical way. In a flexible and shifting social context, human functioning was aided by the ability to develop multiple self-representations: The ability to remember and consistently show the "right" self to others (i.e., the self that others have seen on previous occasions) would facilitate smooth interactions with them. In order to do this, an individual needs to remember others' perceptions of the self, to anticipate how others expect him or her to behave in different circumstances, and to improvise consistent personas in response to the demands of various social roles. These abilities are all crucial elements of self-presentation. Indeed, in

a flexible social environment, self-presentational skills (e.g., deception, self-deception) can be particularly useful.

In summary, the social-pressures perspective offers a linear account of the evolution of the self. According to this perspective, the symbolic self was largely a social self that: (1) emerged out of complex social interaction processes, especially the need for perspective taking and role taking, that may have resulted in the development of a capacity for a theory of mind; (2) was facilitated by the emergence of language; (3) was shaped by others' impressions of the individual (i.e., the private self was shaped by the public self through processes such as reflected appraisal); (4) was mainly in the service of impression management; and (5) was characterized by affiliation- based self-feelings (i.e., self-esteem, guilt, embarrassment).

A Clarification

We wish to add a clarification. Our argument is that the symbolic self is a trait that was selected and distributed in the human population because of its high adaptive value. Indeed, we propose that the emergence of this adaptation is relatively unique to the hominid evolutionary past. However, many of the evolutionary pressures that we discussed (e.g., hunting, group living) would seem to be applicable to other species, such as wolves, hyenas, and tigers. Why don't these animals have a symbolic self?

The answer to our rhetorical question is that evolution works within species rather than between species. That is, natural selection does not magically conjure up adaptations from thin air. A trait must be present in the species genome before natural selection exerts its modifying influence. Thus we are assuming that somewhere during the progress of evolution a fortunate accident occurred. A mutation and/or a favorable mating produced hominid individuals with the capacity for a symbolic self, a capacity that (as far as we know) has not emerged as yet in other species. Such happy accidents often spread rapidly through a reproductively isolated population and can enable members of that population to move into new ecological niches. Certainly, this scenario of isolation, favorable mutation, then

expansion seems to provide a good fit to the "out of Africa" theory that is currently the leading description of the spread of humans across the globe.

On the Relation between the Ecological and Social Self

The ecological- and social-pressures perspectives offer divergent linear accounts for the evolution of the self. it is obvious that the self-concept contains elements both of the private and public self. How did both come to be? One viewpoint is that of synergism. From this viewpoint, ecological and social pressures operated synergistically, leading to the simultaneous evolution of the ecological and social selves. A second viewpoint is that social pressures drove the evolution of the self. That is, the social or public self was primary and subsequently gave rise to the emergence of the private self through reflection, internalization, and efficacy-based self-feelings. According to a third viewpoint, the ecological self was primary. That is, the private self emerged first, and the public-self component was superimposed on this private self by means of processes such as reflected appraisal.

We believe that evolutionary reasoning and contemporary empirical findings are most consistent with this last viewpoint. To begin with, there is a conceptual problem in proposing specific social mechanisms (e.g., language, reflected appraisal) as the sole engine that drove the evolution of the self. As Tomasello (1999) put it, "Invoking language as an evolutionary cause of human cognition is like invoking money as an evolutionary cause of human economic activity" (p. 94). Tomasello argues that language (and, by implication, the kinds of reflected appraisal that can result from language use) can transform the nature of the symbolic self but cannot create it. Furthermore, these mechanisms themselves must have evolved from previous capabilities, such as crude communicative attempts. In short, it is probably the case that the evolution of sophisticated communication capabilities and the social context in which humans existed worked to transform the symbolic self, expanding it from a private to a social self. However, we suspect that it was ecological pressures that were initially responsible for the evolution of the self.

Several lines of inquiry support the primacy of the private self. First, the developmental emergence of the self (in the 2nd year of life) does not necessitate a social context (Howe, 2000; Howe & Courage, 1997). Furthermore, the chronic attributes of the private self are impressively stable across situations (Bem & Allen, 1974; Markus, 1977) and across both relatively short time periods (Pelham, 1991; Pelham & Waclismuth, 1995, Study 1) and the life course (Caspi, Bern, & Elder, 1989; McCrae & Costa, 1994). Even when private selfattributes change, they do so slowly and in a predictable order (Damon & Hart, 1986; Deutsch, Ruble, Brooks-Gunn, Flemming, & Stangor, 1988). Finally, the stability of the private self is achieved by such strategies as the vigorous disposal and discounting of threatening feedback (Campbell & Sedikides, 1999; Sedikides & Green, 2000) and the selective pursuit of confirming feedback (Greenwald, 1980; Swarm, 1983).

Additional evidence suggests that the self is primarily regulated by the volume, availability, accessibility, and inescapability of private feelings and thoughts (Andersen, 1984; Andersen, Glassman, & Gold, 1998). Indeed, it is the private self, with its needs for autonomy and competence (Deci & Ryan, 2000), that regulates personal strivings (Emmons, 1989), personal projects (Little, 1983), or life tasks (Cantor, Markiis, Niedenthal, & Nurius, 1986), with the social context serving as the background for individual action (Carver & Scheier, 1998; Higgins & May, 2001). The autonomy and competence needs of the private self have universal (i.e., cross-cultural) appeal (Sheldon, Elliot, Kim, & Kasser, 2001).

Even more to the point, the mechanism of projected appraisal is unusually potent and is arguably more prevalent than reflected appralsal. For example, humans form an impression of how others view them on the basis of their own self-conceptions (projected appraisal) rather than on the basis of external feedback (reflected appraisal). Furthermore, humans are not accurate in determining how specific others view them (Felson, 1993; Kenny & DePaulo, 1993), and they overestimate the consistency in the impressions that others have of them (Kenny & DePaulo, 1993). These findings imply that social feedback plays a secondary role in the

formation of the self, largely involving the verification of the projected self (Schoeneman, 1981; Sedikides & Skowronski, 1995).

In summary, the evidence collected so far suggests that the private aspect of the symbolic self has evolutionary primacy and sets the stage for the subsequent evolution of the social aspect of the symbolic self. This viewpoint does not deny the obvious synergy between the two selves; the viewpoint only shifts the relative importance for the initial evolution of the symbolic self to ecological pressures. Moreover, the viewpoint has the potential to generate useful empirical queries, paleontological and otherwise. Do prehistoric artifacts point to the primacy of the ecological self? At what temporal stage do signs of social selection pressures become more definite? Also, at what time in prehistory did social selection pressures emerge as an influence on the continuing development of the symbolic self (Caporael, 1997)?

Interestingly, the point at which social pressures may have begun to have increasing impact on the development of the symbolic self may coincide with evidence pointing to the emerging influence of culture in evolution. A core argument of the social pressures perspective is that the symbolic self had the capacity for abstract or symbolic reasoning about both the self and others. Tomasello (1999) argues that this is a key development in human evolution. That is, the ability to understand others by using a "theory of mind" derived from the self, or, as Povinelli, Bering, and Giambrone (2000) put it, a "cognitive specialization for reasoning about [others' mental] states," may be the key development that distinguishes humans from other primate species. Certainly, current evidence suggests that humans, and not other animals, whether primates (Cheney & Seyfarth, 1996; Tomasello & Call, 1997) or great apes (i.e., chimpanzees; Povinelli et al., 2000), have a theory of mind.

The evolution of a theory of mind in humans may have facilitated the influence of cultural evolution on human species. Gould (2000) argued that cultural evolution can interact with natural selection in complex ways, and Tomasello (1999) noted that cultural transmission is a moderately common evolutionary process. However, Tomasello maintained that a specific form of cultural

volution, is unique to Homo sapiens. In cumulative cultural evolution, existing artifacts and social practices (e.g., tools, linguistic symbols, social organization routines) are modified, improved, and eventually transmitted to a new generation through imitative, instructive (i.e., carried out through instruction), or collaborative learning.

How can a theory of mind be a basis for cumulative cultural evolution? A theory of mind allows the organism to gain an understanding of the meaning of various artifacts and practices. By using the self as an analogy, humans can maximize imitative, instructive, and collaborative learning and thus come to a new appreciation of the individual and social functions served by various implements and actions. Because other humans can be conceptualized as intentional beings like the self, such a theory of mind makes the meaning of such cultural achievements easier to comprehend. That is, such theories allow humans to appreciate the intent and motivation behind the creation of cultural traditions. Importantly, this appreciation provides a direction for subsequent action: The capacity for attributions of intentions can have powerful motivational consequences. For example, such attributions can allow an understanding of the improvements in a constructed object or a procedure that need to be preserved (What does this currently do?), as well as for the type of refinements that needed to be made (How can it do it better?). Furthermore, communicative organisms such as humans are motivated to convey this understanding to others ("Let me tell you how to do this better").

The presence of a theory of mind has intriguing implications when considered in combination with other human cognitive capabilities, such as: (1) long-term forward planning and goal setting; (2) mental simulation of goal evaluation and evaluation-contingent affective states (e.g., pride or shame); and (3) awareness of own mortality. Foresight can exert a multiplicative effect on the capacity for a theory of mind. Not only are humans able to understand the present intentions, needs, and goals of conspecifics, but they may also be in a position to modify cultural gains on the basis of their

`estimations for anticipated optimal functions of these gains. Additionally, humans are capable of mentally simulating conspecifics' perceived relevance of various artifacts and practices in the near and distant future. Hence, one can argue that it was to the evolutionary benefit of humans to engage in deliberate and constant improvement of cultural achievements: Their young's prospects for survival and reproductive success was enhanced by such knowledge. Paraphrasing Hamilton (1964), we term this knowledge "simulated inclusive fitness."

Is an Evolutionary Psychology Research Agenda on the Symbolic Self Possible?

The final issue that we consider is whether the ideas that we have described are testable. That is, from the standpoint of empirically oriented psychologists, is it possible to have a research agenda examining the symbolic self that is grounded in these evolutionary ideas?
We believe that explanations of human behavior derived from an evolutionary psychology analysis are testable and falsifiable (Ketelaar & Ellis, 2000). According to Buss's (1995) description of the hierarchical structure of evolutionary explanations for psychological phenomena, a researcher begins with meta-theoretical assumptions, offers a middle-level theory, derives hypotheses, and then proceeds with testing specific predictions that emanate from each hypothesis.
Consider the symbolic self from this hierarchical perspective. The symbolic self is widely observed in the human population. We have conceptualized the self as an adaptation. The naturalistic fallacy notwithstanding, there is no doubt that the symbolic self (i.e., its representational, agentic, and reflexive components) currently serves vital psychological functions. We consider as a suitable middle-level hypothesis the proposal that a strong (but not necessarily an overinflated) symbolic self, an idea that can be termed "selfness," is positively associated with psychological health. Stated otherwise, individuals high in selfness enjoy better psychological health than those who are low in selfness. For example, the absence of self

ness is related to such personal ailments as alienation, alcoholism, and suicide (Baumeister, 1991). Psychological health also promotes reproductive fitness: Individuals who look psychologically healthy are preferred as mates over those who look psychologically unhealthy (Buss, 1989; Symons, 1979). Hence, selfness promotes reproductive fitness.

One line of research has begun to test directly the selfness hypothesis. Gramzow, Sedikides, Panter, and Insko (2000) proposed that the representational (or structural) and executive (or regulatory) components of the self are related to psychological health. They operationalized the representational component in terms of self-complexity (number of self-attributes that are structurally independent of each other; Linville, 1985), self-discrepancies (degree to which actual self-attributes are congruent with ideal or obligatory self-attributes; Higgins, 1987), self-consistency (degree to which self-attributes are perceived to be consistent with each other; Gergen & Morse, 1967), role conflict (whether socially defined roles are perceived as conflictual; Donahue, Robins, Roberts, & John, 1993), and selfattitude ambivalence (whether the self is perceived as containing both extremely positive and extremely negative attributes; Kaplan, 1972). Furthermore, Grarrizow and colleagues operationalized the executive component of the self in terms of ego strength (the ability to perceive and accept reality and to defend against anxiety and displeasure; Barron, 1953), ego control (the tendency to withhold or express impulse; Block, 1961; Funder & Block, 1989), ego resiliency (the ability to modulate one's ego control; Block, 1961; Funder & Block, 1989), and hardiness (control, or the perception of having an impact over outcomes; commitment, or the perception of meaning and purpose in one's life; and challenge, or the interpretation of life changes as challenges rather than threats; Kobasa, 1979). Finally, Granizow and colleagues operationalized psychological health in terms of the absence of depression and agitation. Selfness was, indeed, positively associated with psychological health. The results suggested that the regulatory component of the self is strongly related to psychological health. Additionally, with one exception, all

facets of the representational component of the symbolic self were linked with psychological health. The exception was self-complexity. However, there is an explanation for this null effect. Relevant theory (Linville, 1985) predicts that self-complexity will serve as a buffer against the emotional stress that occurs in response to stressful life events, a prediction that has received empirical support elsewhere (Linville, 1987). The null effect in the Granizow and colleagues ~2000) study is likely due to participants having been stress free when completing the relevant measures. Although the Granizow and colleagues (2000) study was the first comprehensive attempt to examine the beneficial psychological health effects of selfness, the literature is generally consistent with the view that a strong sense of self is positively related to psychological health. For example, agencybased self-regulation in the pursuit of one's goals is related to higher satisfaction with life, greater feelings of vitality, and positive daily moods (Sheldon & Kasser, 1995). Also, a clearly articulated self is related to high subjective well-being and self-esteem and to low neuroticism (Campbell, 1990; Campbell et al., 1996). Additionally, a stable sense of self is linked to lower levels of depression (Kernis et al., 1998) and higher feelings of mastery (Waschull & Kernis, 1996). Interestingly, self-esteem stability is related to self-esteem level. In turn, higher self-esteem is related to positive affect, greater subjective well-being, reduced death anxiety, and successful coping (Leary & Baumeister, 2000).

Another important testimony to the evolutionary significance of the construct of selfness comes from the attachment literature. According to attachment theory (Bowlby, 1973, 1980), the quality of infant-caregiver interactions results in mental working models (i.e., cognitive representations of attachment figures and the self) that shape the self-concept, direct affect regulation, and organize cognition, emotion, and behavior in adolescent and adult relationships. Ainsworth, Blehar, Waters, and Wall (1978) distinguished among three attachment styles: secure (characterized by confidence in the responsiveness of attachment figures in times of need, comfort with interdependence, trust, and closeness), avoidant

(characterized by insecurity in the intentions of other persons and emotional distance), and anxious-ambivalent (characterized by a desire for intimacy coupled with insecurity about others' responses to this desire and fear of rejection). Hazan and Shaver (1987) demonstrated the continuity of attachment styles from childhood to adulthood: Adults who were securely attached to their close relationships reported more secure child-caregiver interactions than adults who manifested avoidant or anxious-ambivalent attachment styles.

We argue that secure attachments constitute an operationalization of selfness. Compared with their avoidant and anxiousambivalent counterparts, securely attached persons have a more complex, clear, and balanced self-concept (Mikulincer, 1995), have higher self-esteem, and feel special and valued by others (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994). More important, securely attached individuals are preferred as mates and companions over anxious-ambivalent and avoidant individuals (Chappell & Davis, 1998). Securely attached persons have high mate value.

Indeed, attachments have been conceptualized from an evolutionary psychology perspective as adaptive (i.e., serving reproductive goals) responses to caregiver environments (Belsky, 1999; Simpson, 1999). Individuals in securely attached relationships have positive and supportive interactions (Senchak & Leonard, 1992; Simpson, Rholes, & Nelligan, 1992), and they provide socialization experiences to their children that foster the belief that the world is relatively safe and that others can be trusted in the context of long-term and rewarding relationships. Also, securely attached caregivers invest in parental care and thus maximize the chances of survival and reproduction in their progeny. Unsurprisingly, securely attached caregivers are likely to have securely attached children (van IJzendoorn, 1995). As stated earlier (Chappell & Davis, 1998), securely attached persons have high mate value.

An important prospect for future research is to articulate additional predictions derived from the selfness hypothesis. Several lines of research might explore the nonsocial roots of the self. If the self developed to

provide an advantage to humans' interaction with the environment, then an investigator ought to be able to find continuing evidence of that advantage. For example, one line of research might explore the fading affect bias in autobiographical memory. This bias refers to the tendency for negative autobiographical events to lose their affective intensity more quickly as time passes than do positive events. Hence, people may continue to get a "rosy glow" when they recall positive events from their lives, but are less likely to experience a "bummed ouC feeling when they think of negative events. A series of recent studies by Walker, Skowronski, Gibbons, VogI, and Thompson (in press) found that mild, nonclinical depressives were particularly likely to experience high levels of negative affect when recalling negative autobiographical memories and hence showed a reduced fading-affect bias relative to the emotions experienced by nondepressives. One might speculate that those who are low in selfness may show a similar retention of negative affect across time. Another line of research might explore the extent to which selfness is related to effective goal setting, emotional regulation, and responsiveness to the environment. Those who are high in selfness should tend to do well in all three areas. These proficiencies may also spill over into task performance: Those who are high in selfness will perform better on any number of tasks than those who are not. The reason is that those who are high in selfness will be better able to "tune into" the environment by making better choices and more effectively regulating motivation and emotion than those who are low in selfness. Additionally, the issue of whether selfness is related to proficiency in dealing with the social world needs to be explored. If the continuing evolution of the self was advantageous to a person's ability to manage his or her social affairs, we ought to find evidence of such advantages in current social relations. For example, selftiess ought to be positively related to leadership effectiveness, relationship stability, the ability to adapt to new social situations, accuracy in social perception and social memory, accuracy in autobiographical memory, and ac~ curacy in perceiving how one is perceived by others.

Summary and Conclusion

In our previous work (Sedikides & Skowronski, 1997, 2000; Skowronski & Sedikides, 1999), we argued that the emergence of the symbolic self in humans was an evolutionary adaptation. In this chapter, we have tried to improve on and refine our past accounts. Specifically, we: (1) refined the definition of the symbolic self, (2) updated the discussion of a plausible evolutionary timescale for the evolution of the symbolic self, (3) described some of the ecological and social pressures that may have led to the continuing evolution of the self, and (4) considered issues of primacy with respect to the environmental- versus socialpressures question. Finally, we described new data that speak to some of the issues that we raised in discussing the evolutionary origins of the symbolic self and posed new testable research questions that might be formulated as a result of considering the evolutionary origins and functions of the symbolic self.

We hope that this effort will stimulate further theoretical advances and will spur empirical forays into the functions of, and possible evolutionary origins of, selfness. After all, if the symbolic self is truly one of the few adaptations that separates humans from other animal species on the bush of evolution, how can researchers settle for anything less?

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