RESEARCH STARTERS
ACADEMIC TOPIC OVERVIEWS

Sociobiology

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Abstract

This article presents an overview and tenets of Sociobiology viewed through a Neo-Darwinist lens. Theories of Sociobiology and subsequent individual and collective behaviors manifested by Sociobiology are also presented. Additionally, insights are presented into ways Sociobiological philosophies impact current sociological thought and gender and sex issues. Insights into different models of thinking are offered through the examination of two models entitled: *Individual Differences Model* and *Social Psychological Model*. Debated issues are also included to provide a framework for understanding the vast academic and societal debate on Sociobiological theories. A conclusion is offered that describes solutions for conceptualizing Sociobiological theory into solving current societal dilemmas.

Overview

Sociobiology combines the fields of sociology and biology. It is the study of biologically based behaviors defined in the context of neo-Darwinian evolutionary history. Sociobiology was originally defined by Wilson (1975) as the "systematic study of the biological basis of all social behavior" (p. 4). Sociobiology focuses on evolutionary explanations of behavior within the context of modern society, and specifically neo-Darwinian evolutionary theory (Nielsen, 1994, p. 267). Sociobiology also refers to the collective enterprise, described by Lopreato (1992) as an "alliance of disciplines" that emerged to public consciousness in the mid-1970s stemming from two key texts. The first key text that mentioned the idea of Sociobiology was Wilson's work entitled: *Sociobiology: The New Synthesis*. The second text was Dawkin's work entitled: *The Selfish Gene*. Both of these texts generated a great controversy, which surrounded the premise that the "contribution of Sociobiology to the understanding of human behavior can be organized around a small number of major theoretical articulations" (Lopreato, 1992). These included the identification of the gene as the basic unit of selection and selfishness and the idea of inclusive fitness, which also includes the roles of relatedness leading to theories of sex and gender differences, the paradox of collective action, concepts of human nature, and psychological foundations of social behavior (Nielsen, 1994, p. 269). Borgerhoff Mulder (2006) wrote that "human Sociobiology," as a term, has changed somewhat and also includes terms like: "human behavioural and evolutionary ecology," "Darwinian anthropology," "evolutionary anthropology," and "socioecology" (p. 21-22). When researching this topic, these additional terms should be considered for enhanced understanding.

In defining the basis for "Sociobiological thought," Dawkins (1989) identified the gene as "the fundamental unit of selection and the basic unit of selfishness. From the gene-centered perspective, the individual organism becomes a temporary collection of

genes that does not directly reproduce itself, but is instead an organism constructed by genes designed to enhance their transmission to the next generation" (Nielson, 1994, p. 269). Wilson (1975) explains, "In a Darwinian sense the organism does not live for itself. Its primary function is to reproduce other organisms; it reproduces genes, and it serves as their temporary carrier. The organism is only DNA's way of making more DNA" (p. 3). This idea promoted the concept of group selectionism, which is the idea that entire groups, or local populations are subjected to natural selection. Wynne-Edwards (1962) argued that when individuals evolve a self-restrain behavior to benefit the group as a whole yet at the expense of the members engaging in it, the altruistic behavior eventually becomes fixated in a given population, and disproportionate group survival occurs.

In argument against this theory, several researchers, including Lack (1966) argued that the tendency for birds to lay a limited number of eggs occurred as a result of individual level selection. Evolutionary geneticists similarly agreed that even though group selection is theoretically potential, its existence depends on a combination of extraordinary circumstances typically not found in nature, resulting as an impossibility in most cases (Williams, 1966, 1975; Boorman & Levitt, 1980). On the other hand, "milder forms of nepotistic altruism among animals would be structured along a gradient of relatedness" to the organisms' propensities toward friendship, "gratitude and sympathy, to moralistic aggression against non-cooperative behavior, to guilt" and seeking the higher good, to "a sense of justice, and even a capacity for detecting deceit and for self-deception" (Nielson, 1994, p. 273).

Despite heated debate within societal and academic ranks regarding Sociobiology and its tenets, some researchers insist that the "sociobiological approach has won. It has spawned societies, journals, and an ever-expanding program of research" (Segerstale, as cited in Jolly, 2000, par. 7). The philosophy has also outgrown "genetic determinism" leaping into debates regarding gender, nature versus nurture, and many of the deeply seated and heated arguments regarding sociology and biology ultimately combining the two ideologies; integrating the two in some areas while separating them in others (Segerstale, 2000; Jolly, 2000). Two such important applications of the Sociobiological debate are sex and parental investments origins and Sociobiology and gender differences.

Applications

Sociobiology: Sex & Parental Investment Origins

One of the central puzzles to the evolution of sexual reproduction is the fact that offspring are produced from the recombination of genes from two parents. Within the origins of sex and parental investment, "sex is paradoxical" because it is typically more advantageous for the individual and for individual genes to be passed along rather than group genetics (Nielsen, 1994, p. 279). In such cases, origins of the current theories of sex emphasize benefits of asexual reproduction in environments that must be conquered quickly where there is little crowding and competition. Sexual reproduction in situations of high biotic interactions with other species has been shown to accelerate the rate of evolution of defenses against predators or parasites that are developing more efficient means of attack (Williams, 1975; Maynard Smith, 1978, 1989, p. 237 – 246; Trivers, 1985, p. 315 – 330).

Life History Theory

Incorporated within theories relating to sex and parental investment origins is "life history theory," which can be used to explain the timing and/or existence of three key events in the life history and reproduction of females, specifically. These three life events include: menarche, menopause, and death. According to Sociobiology and Neo-Darwinist beliefs, the age of menarche can be an exchange of the fitness advantage of reproducing as early as possible, for the "lower survival chances of babies born to an immature mother, complicated by the potential benefits of delaying one's own reproduction by helping one's mother raise siblings" (Nielson, 1994, p. 286). Males experience a much less extensive investment in reproduction, so menopause did not evolve and the loss of sexual function with age was gradual (Pavelka & Fedigan, 1991).

Neo-Darwinist theorists also suggested that the timing of senescence and death itself may be the result of natural selection. This type of natural selection may occur as a result of diminished helping opportunities for post-reproductive women to help with the family or as a result of accumulated late acting harmful genes (Voland & Engel, 1989; Medawar, 1952; Hamilton, 1966; Dawkins, 1989, pp. 40 – 42; 274). Constructed within this argument is an overview of key biological phenomenon which sociologists would argue simultaneously impact and are impacted by social and collective constructs.

The Male Dilemma

Further providing insight into the Sociobiological framework is an overview of the male parental role in reproduction and its subsequent dilemma. Borgerhoff Mulder (1992) approached the issue of parental care in terms of the costs, benefits, and opportunity costs of parental care to both genders. The male dilemma consists mainly between "dad" or "cad" (Harpending & Draper, 1986). According to Borgerhoff Mulder (1992), males are typically more motivated by the physical act of copulating rather than parental responsibility. The male response to such a dilemma is that "males would be expected to seek matings rather than continue to invest

in their offspring; conversely expenditure should be in parental care where the pay off exceeds that of an identical expenditure in mating" (p. 362). Issues affecting such a dilemma are impacted by the stability of a couple's relationship, the general level of promiscuity, and the essentiality of the role of the father to the survival of the offspring (Harpending & Draper, 1986; Gaulin & Schlegel, 1980; Flinn, 1981, Nielsen, 1994, p. 286).

Instead of arguing the role of family responsibilities, Neo-Darwinists argue that these are Sociobiological theories of life history and "optimal allocation of reproductive efforts informing an emerging synthesis in works on parenting or the family" (Nielson, 1994, p. 287). These theories are represented theoretically and can be found in additional research represented by van den Berghe (1979), Lancaster, Altmann, Rossi, and Sherrod, 1987; Lancaster (1989a; 1989b), Lancaster & Kaplan (1992), Troost & Filsinger (1993), and Rossi (1984, 1994) (cf. Nielson, 1994, p. 287). These findings were similarly supported by Buss (1994) who argued that sex differences have a biological basis in reproductive roles, because women face the need for life-sustaining resources while they are pregnant and lactating, while men face the need to reduce uncertainty about the paternity of the offspring they support (Riger, 1997, p. 396).

Sociobiology & Gender Differences

In addition to sex and parental investment issues, Nielsen (1994) asserted that differential psychologists determined that major psychological differences exist between men and women. Early findings suggested that four documented areas of differences existed, which included: higher verbal ability in females, and higher visual-spatial ability, mathematical reasoning, and aggressiveness in males (p. 288; also Maccoby & Jacklin, 1974). Gender difference models of Sociobiology comprise two models of research. The first model is called the Individual Differences Model; the second model is the Social Psychological Model. These two models have created a wide ranging debate within the Sociobiology ideology framing definitions for the four theories within the ideology. The four theories framed within the two models which will be described in this section include:

- The 'Differently Situated' theory;
- The 'Contingent Argument'
- The 'No Differences Model' and
- The 'Disadvantage, not Difference' model (Riger, 1997).

Individual Differences Model

Despite serious debate within the Individual Differences Model, the conceptual framework for the model commenced over 110 years to the work of Francis Galton, a cousin of Charles Darwin, who set up a laboratory at the International Health Exhibition in London and measured the mental abilities of 9,000 people in 1885. The foundation of Galton's work permeated interpretations of research on sex differences. Galton viewed individuals as a bundle of traits and abilities that could be evaluated by measuring people's mental capacities. Galton further believed that a quick picture of someone's performance taken under contrived conditions could provide a comprehensive measure of the individual's abilities in their entirety. The philosophical underpinnings for Galton's work was a belief in "radical individualism" underscored by the idea that mental abilities are made up of "stable and unalterable individual characteristics that owe nothing to social conditions, rather the self is contained in the individual body. Galton reportedly believed that the origins of human actions represent individual choice rather than reflecting social or ethnic group status. Presently, many studies of gender differences such as the emphasis on visual spatial abilities and verbal and math ability are directly linked to Galton's philosophies. Critics of the model state that the model places too many limitations on variables that can be studied through this lens. For example, one such variable may include the study of mixed gender groups, which may produce extraneous results in groups rather than as individuals (Riger, 1997, p. 399).

Social Psychological Model

The Social Psychological Model considers extra-individual factors separate from an individual's inner traits or abilities, but is also impacted by social context or situational factors. The social psychological model views behavior as adaptive rather than fixed. The underlying philosophy for this model envisages ways individual behaviors are shaped by the social environment and simultaneously ways an individual shapes the social environment. One significant limitation of this model is that the model ignores economic, political, and historical forces that shape gender based behaviors. Also, the social psychological model ignores potential relationships between biological factors and potential resulting human behavior, because the social psychological model "treats biology and culture as separable and competing sources of influence" (Riger, 1997, p. 401).

Both of these models are limited in the ways they view human nature, individuals and their environments, and social constructs and individual or collective behavior. However, these two models and the philosophical underpinning of these models frame present views regarding gender and subsequent gender related behaviors and beliefs. These models determine specific views regarding the four main gender evolutionary theories.

Four Evolutionary Theories

Differently Situated

Importantly, Fausto-Sterling (1997) argued that evolutionary theories are not grounded in actual data about human evolution. Instead, proponents of the "differently situated" argument agree that there are important gender differences, but insist that these should be considered socially, not biologically, thereby fitting within the Sociobiological theoretical framework. For example, Eagly (1987) claimed that the "division of labor between the sexes produces gender-role expectations and sex typed skills and beliefs that in turn lead to sex differences in social behavior" (Riger, 1997, p. 396). Miller (1986) believed that sex differences exist, but placed "causal primacy on women's subordinate and men's dominant status" (cited in Riger, 1997, p. 396).

Contingent Argument

According to Riger, another sociobiological argument that researchers advocate is known as the "contingent argument." Researchers supporting this opinion claim that gender differences seem to be contingent on situational or social factors. Brody (1997) argued that gender and emotion seemed to be contingent on other factors, such as culture. Epstein (1988) asserted, "What is regarded as uniquely female in one culture, group or subgroup may be regarded as male in another" (cited in Riger, 1997, p. 397). Markus and Oyserman (1989) supported this view by pointing out that Western women characterized by their interdependence, relational embeddedness, and continuity are contrasted by both men and women in some African and Eastern cultures. Other researchers make a similar point when they emphasize cultural lenses like race, social class, and other within-sex groupings, not just differences between males and females (Riger, 1997, p. 397). Based on these observations, Hurtado (1997) advocated for a model that seeks to examine the fluid nature of individuals' multiple group identities.

No Differences Model

The "no-differences model" emphasizes that no important sex differences exist. Tavris (1992) stated: "Meta-analysis of social behaviors, such as helpfulness, determine that differences are due more to role than to gender, and meta-analyses of intellectual skills, such as math, verbal, and spatial abilities, indicate that differences have virtually vanished or are too trivial to matter" (p. 92). Paradigms as of the late 1990s emphasized that as women and men fulfill similar occupational and familial roles, the relationship between roles would blur and not differ in accordance with gender.

Disadvantage, not Difference

Another argument called the "*disadvantage, not difference*" argument is underscored by James' (1997) statement, "The extent to which the sexes differ is far less important than the consequences of emphasizing such differences in particular contexts" (p. 223). Hare-Mustin and Maracek (1988) originally asserted that "Theories of gender, like other scientific theories, are representations of reality organized by particular assumptive frameworks and reflecting certain interests" (p. 456). These four theories are highly representative of the issues regarding the Sociobiology.

Issues

The issues inherent within Sociobiology are the presiding views of human nature, society, and how humans view themselves and others. These issues exist in multiple disciplines, academic theories, and societal realms. One side of the debate relegates Sociobiology as "weak science." Runciman (2005) objected to the idea that human behavioral scientists write about culture by borrowing from biology "theory of nature" concepts and "using them metaphorically in the hope of carrying over into their own fields of study the prestige enjoyed by the sciences of nature" (p. 1). Runciman further pointed out that despite its acceptance by increasing numbers of "linguists, archaeologists, psychologists, and even economists, the neo-Darwinian paradigm has been largely ignored, if not explicitly disavowed, by comparative and historical sociologists as well as by cultural as opposed to biological anthropologists and historians" (2005, p. 3). Ultimately, Runciman disavowed the notion of Sociobiology altogether by arguing that few if any anthropologists, sociologists, psychologists or historians could successfully argue that novelists, poets, or playwrights have contributed nothing to the understanding of human nature. Theorists who stand opposed to Sociobiology typically view Darwinism as an erroneous view that is unable to successfully integrate science with sociology.

On the other hand, proponents of the Sociobiology view, such as Degler (1991) and Nielson (1994) viewed the emergence of Sociobiology as "the current manifestation of a long-term revival of Darwinism in the understanding of human nature in American social thought" (Nielson, 1994, p. 294). Darwinian anthropologists maintain that "human behavior is adaptive in the sense of being designed to maximize reproductive success and that measurement of reproductive differentials typically illuminates adaptation" (Symons, 1989, p. 131). The Darwinian anthropologist approach may be more appealing to sociologists who are proponents of Sociobiology, because this philosophy emphasizes "phenotypic plasticity," and is largely compatible with rational choice (Nielsen, 1994, p. 294).

Williams (2003) commented favorably on Sociobiology and wrote: "In putting minds back into bodies, bodies back into society and society back into the body, a series of promising agendas have opened up, which encourage if not force us to confront biological-society relations anew in ways that literally 'matter'" (p. 550). Despite the debates and issues impacting Sociobiology, "marrying the social and the biological is not simply possible, but desirable: a significant advance in fact." Constructed from a positive perspective, Sociobiology is not an obstacle, as it presents "opportunities for the taking, despite the fact that "the debate rolls" (p. 559).

Conclusion

Sociobiology combines sociology with biology. Sociology is the study of social science. Biology is the study of the life science. Sociobiology is worth considering, because "cross-level research that acknowledges the reciprocal influence between individuals and social systems promises the deepest understanding of behavior although examination of phenomena within each dimension is also of value" (Cacioppo & Berntson, 1992; Riger, 1997, p. 406). Based on these observations, implications for further research should investigate ways biology and sociology affect humans and understand gender differences, sex traits, and other aspects of human environment. As Riger (1997) suggested, "We need to develop new ways of working that allow us to cross these disciplinary boundaries" (p. 406). Similarly, Benton (2003) also concluded: "Thinking like this is one way to dissolve the dualistic opposition between 'society' and 'nature' without giving in to either a social constructionist reduction of nature to culture, or the reverse reduction of social life to a mediated epiphenomenon of the human genome" (p. 292). To consider the Sociobiological construct enriches humans to consider humanity from a systemic perspective integrating social and life sciences to better under-

stand the human experience (organism) within a societal (social) experience. Perhaps, if researchers spend more time seeking answers from a systemic integrated perspective, many important issues could be solved. In conclusion, further research is needed by both sociologists and biologists dedicated to understanding cultural impacts through a Sociobiological lens.

Terms & Concepts

Biology: Biology can be viewed as both a subject of scientific study and a set of living processes and animating life principles (Williams, 2003).

Cultural Evolution: Cultural evolution can be described as change in the populations of organisms that within a collective society governed by natural selection in a sociological construct.

Evolution: Evolution is change, and is all-pervasive; galaxies, languages, and political systems all evolve. Biological evolution is change in the properties of populations of organisms that transcend the lifetime of a single individual.

Neo-Darwinism: A contemporary version of Darwin's evolutionary theory; the synthesis of genetics and Darwinism. Darwin himself knew very little about genetic variation; however, he recognized that whatever its source, phenotypic variation allowed for natural selection to operate.

Sociobiology: Sociobiology can be described as "the systematic study of the biological basis of all social behavior in the context of neo-Darwinian evolutionary theory."

Bibliography

Alexander, R. D. & Tinkle, D. eds. (1981). *Natural selection and social behavior: Recent research and new theory.* New York: Churon.

Bell, R. W. & Bell, N. J. (1989). *Sociobiology and the social sciences*. Lubbock, TX: Texas Technical University Press.

Benton, T. (2003). Ecology, health, and society: A red-green perspective, in Williams, S.J. Birke, L. and Bendelow, G. (eds.), *Debating biology: Sociological reflections on health, medicine, and society.* London: Routledge.

Boorman, S. A. & Levitt, P. R. (1980). *The genetics of altruism.* New York: Academic.

Borgerhoff Mulder, M. (2006). Whatever happened to human sociobiology? A comment on the 17th annual meeting of the human behavior and evolution society, Austin, Texas, June 2005. *Anthropology Today, 22*(1), 21 – 22. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=19631052&site=ehost-live

Brody, L. (1997). Gender and emotion: Beyond stereotypes. *Journal of Social Issues, 52*(2), 369 – 394. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9710302051&site=ehost-live

Buss, D. M. (1994). *The evolution of desire: Strategies of human mating.* New York: Basic Books.

Cacioppo, J. T. & Berntson, G. G. (1992). Social psychological contributions to the decade of the brain: Doctrine of multilevel analysis. *American Psychologist, 47*, 1019 – 1028.

Cronk, L. (1991). Human behavioral ecology. *Annual Review of Anthropology, 20*, 25 – 53. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=11262149&site=ehost-live

Dawkins, R. (1989) [1976]. *The selfish gene.* New York: Oxford University Press.

Degler, C. N. (1991). *In search of human nature: The decline and revival of Darwinism in American social thought.* New York: Oxford University Press.

Eagly, A. H. (1987). *Sex differences in social behavior: A social-role interpretation.* Hillsdale, NJ: Erlbaum.

Fausto-Sterling, A. (1997). Beyond difference: A biologist's perspective. *Journal of Social Issues, 52*(2), 259 – 278. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9710302045&site=ehost-live

Flinn, M. V. (1981). *Uterine versus agnatic kinship variability and associated cousin marriage preferences: An evolutionary biological analysis.* See Alexander & Tinkle 1981, 439 – 475.

Gaulin, S.J.C. & Schlegel, A. (1980). Paternal confidence and paternal investment: A cross-cultural test of a sociobiological hypothesis. *Ethological Sociobiology, 1*, 301 – 309.

Hamilton, W. D. (1966). The moulding of senescence by natural selection. *Journal of Theoretical Biology, 12*, 12 – 45.

Hare-Mustin, R. T. & Maracek, J. (1988). The meaning of difference: Gender theory, postmodernism, and psychology. *American Psychologist, 43*, 455 – 464.

Harpending, H. C. & Draper, P. (1986). Selection against human family organization, In *On Evolutionary Anthropology: Essays in honor of Harry Hoijer 1983*, ed. BJ Williams, 37 – 75. Malibu, CA: Undena.

Hurtado, A. (1997). Understanding multiple group identities: Inserting women into cultural transformations. *Journal of Social Issues, 53*(2), 299 – 328. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9710302048&site=ehost-live

James, J. B. (1997). What are the social issues involved in focusing on difference in the study of gender? *Journal of Social Issues, 53*(2), 213 – 232. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=15862032&site=ehost-live

Jolly, A. (2000). Battlefield sociobiology. [Book review]. *Science, 288*(5474), 2137. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=3309122&site=ehost-live

Lack, D. (1966). *Population studies of birds*. Oxford: Clarendon.

Lancaster, J. B. (1989a). Evolutionary and cross-cultural perspectives on single-parenthood. In Bell, R. W. & Bell, N. J. (eds). *Sociobiology and the social sciences*. Lubbock, TX: Texas Technical University Press.

Lancaster, J. B. (1989b). Women in biosocial perspective. In *Gender and Anthropology: Critical reviews for research and teaching,* ed. S. Morgen, 95 – 115. Washington, D.C.: American Anthropological Association.

Lancaster, J.B., Altmann, J., Rossi, A.S. & Sherrod, L.R. (1987). *Parenting across the life span: Biosocial dimensions*. New York: Aldine De Gruyter.

Lancaster, J.B. & Kaplan, H. (1992). Human mating and family formation strategies: The effects of variability among males in quality and the allocation of mating effort and parental investment. In *Topics in primotology,* ed. T. Nishida, W.C. McGrew, P. Marler, M. Pickford, F.B. M. de Wall, 1, 21 – 33. Tokyo: University Tokyo Press.

Lopreato, J. (1992). Sociobiology. In *Encyclopedia of Sociology,* ed. E. F. Borgatta & R. Montgomery. New York: MacMillan.

Maccobi, E. E. & Jacklin, C. N. (1974). *The psychology of sex differences.* Stanford, CA: Stanford University Press.

Marcus, H. & Oyserman, D. (1989). Gender and thought: The role of the self-concept. In M. Crawford & M. Gentry (Eds.), *Gender and thought: Psychological perspectives*, 100 – 127. New York: Springer-Verlag.

Maynard Smith, J. (1978). *The evolution of sex*. Cambridge: Cambridge University Press.

Maynard Smith, J. (1989). *Evolutionary genetics*. New York: Oxford University Press.

Medawar, PB. (1952). *An unsolved problem in biology.* London: HK Lewis.

Miller, J. B. (1986). *Toward a new psychology of women*. Boston: Beacon Press.

Nielsen, F. (1994). Sociobiology and sociology. *Annual Review of Sociology, 20*, 267 – 303. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9409062868&site=ehost-live

Pavelka, M. S. & Fedigan, L. M. (1991). Menopause: A comparative life history perspective. *Yearbook: Physical Anthropology, 43*, 13 – 38.

Rasa, A. E., Vogel, C. & Voland, E. eds (1989). *The sociobiology of sexual and reproductive strategies*. London: Chapman Hall.

Riger, S. (1997). From snapshots to videotape: New directions in research on gender differences. *Journal of Social Issues, 53*(2), 395 – 408. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9710302052&site=ehost-live

Rossi, A. S. (1984). Gender and parenthood. (1983 Presidential Address.) *American Sociological Review, 49*, 9 – 19.

Rossi, A. S. (ed 1994). *Sexuality across the life course*. Chicago, IL: University Chicago Press.

Runciman, W. G. (2005). Culture does evolve. *History and Theory, 44*, 1 – 13. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=15684077&site=ehost-live

Segerstrale, U. (2000). *Defenders of the truth: The battle for science in the sociobiology debate and beyond*. New York: Oxford University Press.

Symons, D. (1989). A critique of Darwinian anthropology. *Ethological Sociobiology, 10*, 131 – 144.

Trivers, R. L. (1985). *Social evolution*. Menlo Park, CA: Benjamin Cummings.

Trivers, R. L. (1991). Deceit and self-deception: The relationship between communication and consciousness. In *Man and bBeast revisited*, ed. M. Robinson, L. Tiger, 175 – 191. Washington, D.C.: Smithsonian Press.

Troost, K. M. & Filsinger, E. (1993). Emerging biosocial perspectives on the family. In *Sourcebook of family theories and methods: A contextual approach*, ed. P.G. Boss, W.J. Doherty, R. LaRossa, W.R. Schumm, S.K. Steinmetz, 677 – 710. New York: Plenum.

Van Den Berghe, P. L. (1979). *Human family systems: An evolutionary view.* New York: Elsevier.

Voland, E. & Engel, C. (1989). *Women's reproduction and longevity in a premodern population*. See Rasa et al 1989, 194 – 205.

Williams, G. C. (1966). *Adaptation and natural selection: A critique of some current evolutionary thought*. Princeton, NJ: Princeton University Press.

Williams, G. C. (1975). *Sex and evolution*. Princeton, NJ: Princeton University Press.

Williams, S. J. (2003). Marrying the social and the biological? A rejoinder to Newton. *Sociological Review, 51*(4), 550 – 561. Retrieved June 6, 2008 from EBSCO online database Academic Search Premier. http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=11565189&site=ehost-live

Wilson, E. O. (1975). *Sociobiology: The new synthesis.* Cambridge, MA: Harvard University Press.

Wynne-Edwards, V. C. (1962). *Animal dispersion in relation to social behavior.* Edinburgh: Oliver and Boyd.

Suggested Reading

Dickens, P. (2000). *Social Darwinism*. Buckingham: Open University Press.

Rose, S. (1997). *Lifelines: Biology, freedom, and determinism*. Harmondsworth: Penguin.

Shilling, C. (1993). *The body and social theory.* London: Sage.

Williams, S. J. (2003). *Medicine and the body.* London: Sage.

Wrong, D. H. (1994). *The problem of order: What unites and divides society.* New York: The Free Press.

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