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period which may lay the foundation for affective ties and social interdependence, most often evidenced by strong bonds of kinship. (The possibility of genetic predispositions for maternal behavior should not be overlooked.) The result appears to be that interaction patterns are characterized by a high degree of reciprocity in all sociocultural systems. Moral norms, "oughts" and "ought nots," arise from these patterned expectations. And these inhibitory moral traditions act to set limits upon individual selfish tendencies in all sociocultural systems.

Having taken issue with part of Campbell's argument, we wish to put the matter in perspective by expressing our admiration of the essay as a whole and by suggesting that the sociobiological orientation advocated by Campbell will come to be adopted by a significant proportion of behavioral scientists.

NOTES

1. Donald T. Campbell, "On the Conflicts between Biological and Social Evolution and between Psychology and Moral Tradition," in this issue.

2. Robert L. Munroe and Ruth H. Munroe, *Cross-cultural Human Development* (Monterey, Calif.: Brooks/Cole Publishing Co., 1975); J. W. M. Whiting and B. B. Whiting, "Altruistic and Egoistic Behavior in Six Cultures," *Anthropological Studies* 9 (1973): 56-66; idem, *Children of Six Cultures: A Psycho-cultural Analysis* (Cambridge, Mass.: Harvard University Press, 1975).

3. L. C. Freeman and R. F. Winch, "Societal Complexity: An Empirical Test of a Typology of Societies," *American Journal of Sociology* 62 (1957): 461-66.

4. J. D. Herzog, "Religious Education and Socio-cultural Complexity: A Cross-cultural Study" (paper presented at the meeting of the American Anthropological Association, Philadelphia, Pennsylvania, November 1961).

5. Campbell.

6. G. P. Murdock, "The Common Denominator of Cultures," in *The Science of Man in the World Crisis*, ed. R. Linton (New York: Columbia University Press, 1945).

ROBERT L. MUNROE

RUTH H. MUNROE

Pitzer College, Claremont, California

BEHAVIORAL THEORY, FUNCTIONAL IDEOLOGY, AND MORAL TRADITION

In his presidential address to the American Psychological Association, Donald T. Campbell again has demonstrated impressively that "nature is not organized as universities are."¹ The descriptive and normative significance of such transdisciplinary contributions to behavioral theory as behavioral genetics, sociobiology, and related emerging disciplines is suggested cautiously but imaginatively. Arresting analytical syntheses are revealed in a succession of epigrammatic passages of remarkable power within the "cybernetic reach" of its overarching theoretical framework. Precisely

because of the reconstructive character of Campbell's programmatic proposals, they are likely to provide an agenda for years of further study. An invitation to Campbell or others to make explicit the implications of this work for related bodies of theory, particularly in psychology and sociology, therefore appears appropriate.

This comment suggests two areas in reference to which metatheoretical elaboration of Campbell's work appears particularly necessary: (1) methodologically individualist theory within the newer traditions of mathematical behaviorism and (2) functionalist theory in sociology.

BEHAVIORAL THEORY: BIOCULTURAL EVOLUTION AND SECULAR-SACRED TRADITION

Recent theory of complex social systems founded upon individualistic behavioral premises provides a basis in biological egoism, through the selection and retention mechanism of operant conditioning, for the formal derivation of theorems about sanctioned behavior patterns or institutions within an entire social system. The postulate of operant conditioning generates theorems of reciprocal support and reciprocal opposition permitting the formal derivation of behavioral theorems serving as testable hypotheses.² This theoretical strategy, which involves moving from a well-established psychological postulate to its sociological implications through nomological constructions characterized by empirical generality and autonomous deductivity, generates heuristic analogues to existing complex social systems.³ These contain institutional patterns which typologically resemble existing arrangements to an extraordinary degree. Types of cooperative behavior in complex urban systems which are attributed by Campbell to counterhedonic religious and moral traditions are regarded as epiphenomenally altruistic and are predicted within the framework of an explanatory egoism. Indeed, these sanctioned patterns of behavior describe secular normative imperatives which constitute and generate moral traditions within the simulated complex social systems by the postulated behavioral mechanisms of operant conditioning and reciprocity (negative as well as positive) alone, without the explanatory *deus ex machina* of Campbell's presumedly contranatural religious and moral precepts.

Such theory thus provides an abstractive paradigm for the study of complex social relationships which is founded upon the critically important "missing link" in egoistically motivated behavior as presented in Campbell's address—specifically, the principles of negative as well as positive reciprocity which demonstrably are implied by such egoism in operantly conditioned behavior. Although such analytical demonstration does not in itself affirm the historical necessity of such behavior, it can be demonstrated that a postulated initial disposition to continue any activity leading to the achievement of individually valued objects of activity and its converse necessarily generate an entire network of mutually valued cooperative activity within any interacting collectivity over time as well as periodic conflict among subsocieties which define their values as in "zero-sum" opposition (with values culturally internalized and subjectively defined and with epistemic limitations upon individual knowledge of gain and risk). The complex transactions which result from egoistically motivated reciprocal support and reciprocal opposition reach equilibrium around individually value-maximizing, positive-sum,

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cooperative relationships, although (in Aristotelian manner) with cyclical disruptions stemming from class inequality and disparities in the degree of class-specific, individual value maximization which the social system provides. This stable state of transactional equilibrium, resulting from reciprocity, is behaviorally based upon an egoistic "selfishness" which is not an "autistic" egoism and which generates what is in several respects functionally analogous to the inhibitory "altruism" of religious, moral, and other normative traditions whose convergent evolution in urban civilizations is described by Campbell. Operant conditioning and reciprocity thus generate transactional relationships characterized by patterned behavioral norms which approximate the descriptive as well as prescriptive norms of complex real societies, except, interestingly, in those instances in which the "prescriptive" norms involve dissimulational moral rhetoric rather than conditioned behavioral codes (e.g., in the case of duplicity by government officials).

A juxtaposition of these theoretical works with Campbell's produces a convergence of conclusions about the institutional characteristics of functional social systems but, significantly, from alternative and entirely different theoretical perspectives: one leading to a natural extension from genetically inherited behavioral dispositions to secular moral traditions, the other requiring the superimposition upon biological human nature of countervailing religious traditions and moral codes.

Such anomalies in recent theoretical work suggest the need for a reexamination of the complementarities as well as conflicts of biological and social evolution within the framework of such behavioral mechanisms as operant conditioning and reciprocity, especially with reference to the emergence, selection, and retention of complex forms of cooperative social relationship analogous to those to which Campbell's distinguished theoretical synthesis is addressed.

The epistemological and cognitive economy which would be produced by the reconciliation of such apparently conflicting theoretical systems suggests the value of further efforts at theoretical synthesis—and the need for the parsimonious reduction of social-systems theory.

FUNCTIONAL THEORY: THE HUMANISTIC CONSERVATIVE AS SYSTEMATIC EXPERIMENTALIST

Another area in which the elaboration of Campbell's contribution would be exceptionally useful is in reference to the concept of societal "functionality" and some aspects of the sociologically "functionalist" and "Burkean" ambience which it reveals. Within such a framework a number of philosophical and methodological problems are immediately evident.

Among these are problems empirically as well as conceptually linked to the definition of "society." Given the corporate character of societies, that is, their existence beyond the lives of any of their members in any particular space and time, which members provide their embodiment? If the embodiment of any society, like that of a corporate emergent species in biology, is taken to be the membership of a defined interactive collectivity in a particular space and time, the functionality of a particular pattern of ordered relations for this specified entity cannot be generalized beyond its unique ecological position in space and time.

The "optimization" of "collective goals" is similarly problematic, with such a putatively descriptive conceptualization immediately suggesting problems of teleology, mechanism, hypostatization, reification, normative bias, and descriptive indexing inseparable from its implicit analogy of society and organism.⁴ The determination of "optimal" modes of individual behavior for optimizing "collective goals" is equally problematic. It is doubtful, for example, that such optimization for the defined collectivity can be defined accurately by any summation of optimizing strategies for its constituent individuals, since what is optimally "functional" for each individual may not be for the society, as recent decision theory has demonstrated. Nor can we affirm the reverse, that what is optimally "functional" for the society is for the individual, in part because those who initially establish the "rules of the game" (e.g., institutionalized sanctions for compliance and deviance) thereby have prestructured the outcome independently of individual preferences (as would be intuitively evident, e.g., in the case of caste societies), a problem not resolved even with the relativistic perspective which views optimization within a culture-specific, class-specific, or phenomenological definition of values (e.g., acceptance of immediate caste subordination and fidelity to caste obligations in return for anticipated returns in an afterlife). Similar functional traditions or functional myths and their supportive ideologies in other institutional areas (e.g., with reference to the institution of property and its related religious and moral precepts) are also subsocietally specific in their valued or dysvalued effects. The holistic, class-inspecific conceptualization of "society" therefore suggests the question frequently directed to functionalist interpretations in sociology: "functional" for whom? This question is lost in any conceptualization of society which views it as an organically interrelated unitary whole, whose existence implies the organic equifunctionality of its constituent parts. Given the amorphous boundaries of the human species as well as those of any conceivable society, the definition of "society" becomes analytically salient in determining the "functionality" of its moral traditions.

Even with these necessary qualifications, the independent and convergent evolution and selective retention of similar social organizational principles, transcendent moral traditions, and systems of belief and their importance for the functioning and conservation of complex societies indeed merit the most serious study.

What emerges from Campbell's generative synthesis—rooted in heretofore separate and indeed perhaps antithetical traditions of evolutionary theory and psychological or moral ideology—defies categorization as conservative, as this term is understood within extant social philosophy, for it is a singular conservatism founded in an implicit respect for systematic experimentation such as that contained in the process of evolution itself. Like that of Edmund Burke, whose conservatism was founded upon a profound respect for the abstracted wisdom of history as manifested in its secular and sacred institutions, Campbell's faith in the "functional wisdom" contained in social evolution inheres in its character as "a tradition wiser than any of the persons transmitting it."⁵ In affirming this faith Campbell has issued an admonition—similarly Burkean in spirit—to those incautious scientists who fail to recognize that "history is the greatest of all experiments" and who ignore the corollary advice of the conservative humanist, "Experimentum in corpore vili" ("Experiment only on bodies of little value").

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NOTES

1. Donald T. Campbell, "On the Conflicts between Biological and Social Evolution and between Psychology and Moral Tradition," in this issue; the quote is from Bertram M. Gross, "Systems Theory" (Symposium on Systems Theory, Syracuse University, New York, 1967).
2. Edward C. Uliassi and Roger J. Chacon, "The Methodology of Behavioral Theory Construction: Nomological and Axiomatic Aspects of Formalized Theory," in *Formal Methodology of Empirical Sciences*, ed. Ryszard Wojcicki, Marian Przelecki, and Klemens Szaniawski (Dordrecht: D. Reidel Publishing Co., Synthese Library, in press).
3. An early version of this work appears in my "Transactional Model of Political Behavior" (Ph.D. diss., Syracuse University, 1970).
4. Campbell.
5. Ibid.

EDWARD C. ULIASSI

Northeastern Illinois University