Technical Progress, Social Structure, and Personality

In the past decade a number of investigators have singled out early childhood training as a key independent variable for economic development. Resting their case partly on psychoanalytic assumptions, these investigators argue that the source of entrepreneurial dynamism (as well as sluggish traditionalism) lies in personality characteristics that are forged as the young child attempts to handle his aggressive, dependency, and other needs. If the appropriate childhood experiences are sufficiently widespread, it is maintained, a class of creative entrepreneurs will appear, and they will provide the impetus to a burst of economic growth. Sometimes specific groups (for example, Protestants) are identified as having a religious tradition, family structure, and pattern of training children that are especially productive of economic innovators. Last year a major book by the chief spokesman for this approach appeared —*The Achieving Society*, by David C. McClelland of Harvard [reviewed in *Science* **134**, 1608 (1961)]. Now a second volume, by another spokesman, Everett E. Hagen of Massachusetts Institute of Technology, has appeared under the title **On the Theory of Social Change: How Economic Growth Begins** (Dorsey Press, Homewood, Ill., 1962. 574 pp. $10). Interest in and controversy over these volumes has been so great that early childhood training promises to become Miss Independent Variable of 1962.

Hagen opens his analysis by posing the standard question about development: "Why have the people of some societies entered upon technological progress sooner or more effectively than others?" In the first few chapters he criticizes the adequacy of a number of explanations of growth that stress such variables as the spread of knowledge, race, religion, and economic conditions. He denies altogether the relevance of some of these variables and suggests that, while others might be necessary conditions, none is sufficient for stimulating development. His critique is convincing, but with respect to some of the variables (such as climate and race) few scholars need convincing.

Role of Personality

Hagen's theory of change is presented in chapters 4 through 12. He begins with a characterization of traditional societies (here he follows Redfield's account). Traditional societies are bound by custom, have hierarchical social structures, place individuals in roles by ascriptive standards, and display low levels of economic productivity. Hagen argues that these societies produce a definite personality type, the authoritarian. Because the human condition is so precarious in traditional societies, people resolve their fear and rage by relying on an authoritarian social structure. The individual becomes submissive to those above him, domineering to those below him. He fears to use his judgment and initiative and "finds it safer to rely on traditional rules or on the judgment of older, wiser and superior persons." Thus he cannot be much of an innovator. In contrast to the authoritarian personality is the creative one, whose relations to his needs and to the world allow him to experiment with, manipulate, and remake his social and cultural environment. Relying on the work of Murray, Erikson, and others, Hagen sketches an ideal-typical set of childhood experiences that produce the authoritarian and the creative personalities.

How do traditional societies, locked firmly by their authoritarian structures, ever produce creative individuals? Hagen envisions a process involving several stages. The first stage is the "withdrawal of status respect" from some social group. This may occur when one society conquers another, when valued symbols of a group are denigrated, or when immigrants are not accepted in a new society. The impact of this withdrawal of status respect on authoritarian parents leads them to social retreatism over a period of generations—shiftlessness, fantasy behavior, apathy, and so on. After a period, however, this retreatism gives way to creativity, which may be especially pronounced among members of a minority group that has been subject to withdrawal of status respect. The dynamics of the historical sequence—authoritarianism, withdrawal of status respect, retreatism, and finally creativity—are provided by tracing the subtle ways in which parents treat children and children react to parents over the generations.

Hagen devotes chapters 13 through 15 to instances of successful growth in England, Japan, and Colombia. In each case he traces historical sequences that recapitulate his general model. For each country he identifies groups whose circumstances made for maximum creativity—Nonconformists in England, a variety of classes in Japan (perhaps lower samurai and wealthy peasants most of all), and the Antioqueños in Colombia. Chapter 16, written by Clifford Geertz of the University of Chicago, contrasts economic development in two Indonesian towns. This is an excellent piece of analysis, but it is not exactly a "case in point" for Hagen's theory, as the chapter's heading advertises; Geertz's essay, while not inconsistent with Hagen's scheme, is not a detailed application of it.

Finally, chapters 17 through 19 deal with colonial situations, which constitute a variation on Hagen's major theme. These societies (for which he uses Burma and the Sioux Indians as illustrations) are subject to withdrawal of status respect and retreatism. In addition to retreatism, however, even more extreme reactions develop, such as identification with the aggressor, ritualism, and messianism. Hagen does see, however, the possibility of some creativity in these societies in the future.

Analysis and Interpretation

Hagen's analysis suffers from his proclivity to play fast and loose with some of his data. In the broad sweep, he is willing, in ten pages, to interpret English history between 1087 and 1422 (or rather Trevelyan's version of it) as a period of withdrawal of status respect

and its several sequels. Of necessity his facts are thin and his causal lines tenuous. Nevertheless, even those of us who believe in interpreting history in general categories must bridle at such cavalier gestures.

In detail, too, Hagen's inferences are vulnerable. He analyzes the characteristics of entrepreneurs in 18th-century England, for instance, and finds that Nonconformists are heavily represented. This fact presumably supports Weber's thesis concerning the importance of religious dogma and Hagen's thesis concerning the importance of psychological needs for achievement and autonomy that stem from a disadvantaged status position. Then he turns to the Scottish entrepreneurs of the period (for 12 of which he has relevant information), and notes that a majority were not members of the established Presbyterian church but of minority and presumably disadvantaged religious groups. From this he concludes that "the common denominator is not dogma but independence—in psychological terms, need [for] autonomy." He then adds that "this conclusion countering the Weberian thesis is perhaps the most exciting addition to previous analysis suggested by the statistical study." I feel a twinge of pity for those 12 poor Scottish entrepreneurs, who have to support such a heavy conclusion all by themselves.

To his credit, Hagen consistently relates personality and social structure. Yet the most pervasive flaw in his approach lies in the *way* in which he relates the two. He displays a disquieting readiness to infer psychological states directly from social structure, and vice versa. For instance, he remarks that Burmese males "were not certain of their manliness." On the basis of this psychological fact, he attempts to explain several social facts—frequent marital infidelity, the institution of celibate monkhood, and the "meticulous attention to relative social rankings and extreme deference to the judgment and will of persons of superior rank." Or, reasoning the other way, Hagen infers the following psychological facts from the existence of a situation of colonial domination: "The father [in the dominated country] subjected to the most severe withdrawal of status recognition *must* have reacted with especial severity in his home. Denied other channels for his need dominance and his rage, he *must* have asserted them in the home with extreme harshness" (italics mine). Such statements rest on no psychological data and fly in the face of what we know about the variation in psychological reactions to the stresses of the colonial situation.

Hagen formalizes this flaw in an appendix to chapter 4, in which he asserts that, if a society is not changing, it is possible to deduce knowledge of the social structure from knowledge of personalities, and vice versa. If one set of facts is known, "specifying the other . . . is redundant." Reasoning thus, we should be able to deduce the level of racial discrimination in the United States (a social fact) from a knowledge of the level of antagonism of whites toward Negroes (a psychological fact). Or alternatively, we could deduce the level of antagonism from a knowledge of the level of discrimination. But it is well known that much discrimination is practiced by nonantagonistic people and that many antagonistic people do not discriminate. To assume a one-to-one correspondence between social structure and personality, then, leads to gross errors. But Hagen relies on this assumption of mutual reductionism in principle and in practice. To my mind this is the main reason why, in the last analysis, the volume is so unconvincing.

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Research Resume

Advances in Comparative Physiology and Biochemistry. vol. 1. Otto Lowenstein, Ed. Academic Press, New York, 1962. xii + 392 pp. Illus. $12.

This volume is the first in a projected series, *Advances in Comparative Physiology and Biochemistry*, under the editorship of Otto Lowenstein. The balance between review articles and experimental papers in any field is difficult to maintain. In comparative physiology, reviews have formerly been published in biological review journals and in monographs. Recently a series of books on the physiology of special groups of animals has been initiated; volumes on the physiology of fishes, crustaceans, and birds have appeared, and one on mollusks is in preparation. The *Annual Review of Physiology* carries two chapters on selected topics in comparative physiology. The present volume is no substitute for a text, although it may replace some monographs, and it will do much to establish the series. The style is more discursive and critical that that of the *Annual Review of Physiology*, and illustrations are included. All of the contributors are British, and one wonders whether, in view of the difficulty of getting two comparative physiologists to contribute each year to the *Annual Review of Physiology*, an annual publication with papers by five or six authors can be maintained.

The chapter by G. M. Hughes and G. Shelton on respiratory mechanisms and their nervous control in fish impressed me as much better than the corresponding treatment in the book *Physiology of Fishes*; the chapter by Hughes and Shelton is critical, it is replete with new suggestions and interpretations, and it includes much on cardiovascular as well as on respiratory and nervous physiology. The chapter by R. W. Murray on temperature receptors is also outstanding in its coverage and theoretical treatment of mechanisms of temperature sense. E. J. W. Barrington presents a phyletic survey of digestive enzymes and includes a discussion of control of enzyme levels. H. Blaschko's chapter on amine oxidases in mammalian blood plasma deals with a more restricted subject than the other chapters and introduces comparative biochemists to a little-known topic; however, the physiological significance of these enzymes is uncertain.

The lag between the writing of these reviews and their publication is 1½ to 2 years—much longer than for the *Annual Review of Physiology*. A few references to 1961 papers have been inserted. For example, G. Hoyle critically reviews neuromuscular physiology from the time his well-known monograph was published (completed in mid-1956) to the beginning of 1960. He makes one serious error in reporting my work on two muscles of very different properties in *Golfingia*, by supposing they are the same muscle. J. A. C. Nicol presents a good survey of the often-reviewed subject of animal luminescence, but it is unfortunate that he wrote before the McElroy-Glass volume on light and life appeared. In such a rapidly advancing field as compara-