teresting array of data derived from the application of Stevens's methods to the measurement of attitudes about crime, money, national power, social status, political dissatisfaction, and so forth.

Overriding all is Stevens's adventurous search for the invariant rules that he felt sure govern our behavior, in particular our sensory and perceptual behavior. The power law, repeatedly confirmed and vastly extended, satisfied that basic search. The power law answers the question Fechner posed back in 1860 about how sensation is quantitatively related to the stimulus. With a new paradigm established, science moves forward, refining, polishing, extending, so that psychophysics has already advanced too far for another single person to command the scope that Stevens still could in *Psychophysics*.

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Modern Experiences

Becoming Modern. Individual Change in Six Developing Countries. ALEX INKELES and DAVID H. SMITH. Harvard University Press, Cambridge, Mass., 1974. xiv, 438 pp., illus. $15.

This is the kind of substantial research on a large subject that one always hopes to find but seldom does. If its implications are debatable—and they are—the debate will now be better informed.

Social and economic development has many consequences, among them being its effects on the way people think and feel about themselves and its effects on the standards by which people organize their lives. And on these subjects there are two schools of thought. According to the first, urbanization and industrialization are destructive of people as persons. They expose workers to a Hobbesian nightmare: to competition and exploitation. They assault them in body and in spirit, destroying their joy and their creativity, their humane tolerance for one another and their capacity for solidarity. They lower intellectual horizons and undermine feelings of personal worth. In the usual formulation, these consequences are thought more likely to occur if modern ways are introduced rapidly and under conditions of free-market capitalism.

Inkeles and Smith favor the second school of thought, and their expectations are quite different from the ones just described. From their reading of earlier research they conclude that the typical effects of economic development are an increase in personal freedom, confidence, and competence and a widening of horizons. In the research reported in this volume they have tried to measure each of a series of effects they expect; they conclude, on empirical and theoretical grounds, that the effects constitute a single dimension, Overall Modernity; and they employ a composite measure of that dimension as the dependent variable, using it in studies of approximately 1000 workers in each of six developing countries: Argentina, Chile, India, Israel, Nigeria, and East Pakistan (now Bangladesh).

It is worthwhile to itemize the expectations with which this research was begun. Inkeles and Smith think that more modern social conditions lead to more of the following characteristics in individuals: openness to new experience and to new ways of doing things; readiness for change (acceptance of changed opportunities, greater willingness to allow others to do things in new ways); being disposed to form and hold opinions on a large number of issues that arise within and outside one's immediate environment; being aware of the diversity of attitudes and opinions around one and valuing these variations in opinion; being informed about the wider world (knowing, for example, where Moscow and Washington are and that they are national capitals); being oriented to the present or the future rather than the past; believing that people can learn to exert considerable control over the environment, that they can better arrange human affairs, and that they can participate personally in this redesign of conditions affecting their own lives; feeling able to plan, valuing plans, and actually engaging in planning; seeing the physical and social worlds as calculable and dependable (believing, for instance, that the world is lawful, being willing to trust strangers); valuing technical skill and favoring a distribution of rewards to individuals according to the contributions they make through the exercise of skills; aspiring to educational and occupational advance for oneself and one's children (and valuing discoveries about the natural order as a source of solutions to human problems); awareness of, and respect for, the dignity of others (as, for example, in restraint in dealing with subordinates); understanding the logic of decisions at the basic level of production in industry.

One of the authors' achievements is the development of an interview in which all these points, and many others, are touched upon. This interview required six months of pretesting. Questions were worded so as to be understandable to persons of little or no education in six widely different cultures. The meaning of the questions was standardized across six languages. Safeguards were devised to prevent the results from being affected by the tendency of some respondents, especially of persons with little education, to "agree" with statements of opinion to which the interviewer wants a reaction. Systematic checks were made to ensure that respondents understood the meaning of the questions and that the interviewers did not substitute their own answers for those of the respondents. Because the interview was long (taking from three to four hours to conduct), the whole form was edited so as to provide an interesting and coherent experience for interviewees. Local people were recruited and trained to do all the interviewing and most of the supervising of the work in each country. It is a measure of the success of these efforts that almost all the people who fell within the authors' samples agreed to an interview, stayed with it to the end, and seemed to enjoy it.

There are many special samples in this study, but four provide the basic data. In each country, factories were selected from official lists. These factories were to come from at least three cities, one main industrial center and two lesser places. Half the factories were "traditional" and half "modern." (The modern factories were those that [i] treated their workers as citizens possessed of rights and as having a limited and clearly defined relation with the factory and [ii] had a management that showed much interest in the efficiency and continual improvement of factory organization and production [p. 176].) Two samples of workers were then chosen from each of these factories: a sample of men aged 18 to 32 who had worked in a factory for three or more years, and a sample of men, comparable with the first in age, education, ethnicity, and religion, who had had less than three months of factory experience. The third basic sample was matched as far as possible with the first and consisted of men working in agriculture who had had no industrial experience and who lived in the districts from which the industrial workers originated. The fourth basic sample, likewise designed to match the first, consisted of long-time urban workers who lacked both industrial experience and experience in other complex organizations.

(It consisted largely of domestic servants, craftsmen, vendors, drivers, waiters, and clerks in small shops.)

The primary question is whether the men who have had the most experience in modern institutions will have the highest scores on an Overall Modernity (OM) scale. The answer seems to be that they have—and dramatically so.

The authors describe several forms of the OM scale, but there is one version they most often employ (OM 500). It consists of 100 items from the interview, each relating significantly to the score derived from the sum of the scores on the whole set of these items (total scores range from 0 to 100). Each of the major components the authors consider elements of modernity is represented in this scale by three to five items. I shall return to the construction of this scale at a later point, but it should be said at once that it meets high standards of technical adequacy and that it does so in each of the populations drawn from each of the six countries under study (for example, its Kuder-Richardson reliability ranges from .8 to .9).

A principal-components factor analysis shows that the items in OM 500 load heavily on a first factor, indicating that they do indeed contain a strong, common meaning. (This is found in the samples from each country.) Further statistical tests show that this meaning is contained in all the items and not simply in those relating to a single facet of modernity among those that were measured.

Three aspects of a modern experience were found to relate significantly and independently to high scores on OM: years of school completed, years of factory experience, and exposure to the mass media (listening to the radio, reading a newspaper). These relationships hold up when controls for several other variables are employed: controls for father's education, years of urban experience, the modernity of the factory in which the worker is employed, the cosmopolitanism of the city in which he lives, the area of the city in which he resides, his birth in the city as against the country, and the rural or urban location of the school in which he was educated. These controls were exercised by means of first-order partial correlations and by comparing workers who were individually matched to be alike on all but the characteristic chosen as a predictor.

Certain other findings are of special interest. Farmers who participate in an agricultural cooperative have scores on OM that are comparable to those of factory workers. (The data on this come only from Israel and East Pakistan.) The quality and quantity of a man's urban experience are positively related to his score on OM, but this association disappears when factory experience is controlled. A man's education and his score on OM are positively associated with the education of his father, but the correlation between his father's education and OM dwindles almost to insignificance when the man's own education is controlled. Years of education in a rural school have as strong a correlation with scores on OM as do years of education in an urban school.

It might be thought that modern experiences such as exposure to the mass media, work in a factory, or years of schooling would affect a man's orientations but not his actual behavior. Separate analyses show that both are affected. Not just a man's attitudes but his knowledge of current events, his effective literacy, and his cognitive complexity are all related to his having had more modern experiences.

Are respondents who have modern experiences, or who have high scores on OM, more likely to be under greater personal stress? A standard questionnaire on psychosomatic symptoms shows no differences among respondents by their degree of modernization.

These many relationships are found in all or almost all the countries studied. Are they, however, of trivial magnitude? The basic independent variables have a multiple correlation with OM scores that ranges from .56 in Israel to .79 in India with the median at .69 (p. 279).

All this is impressive. As Inkeles and Smith say, they have uncovered relationships that cut across wide differences in culture and historical setting. Men's experiences in young adulthood are found to be importantly related to their outlook and skills. But how are the findings to be explained?

What is it about factories, schools, or exposure to the mass media that makes the difference? And, since these differences entail comparisons with rural workers, what, specifically, are the experiences of rural workers in these countries?

In most of these countries (Israel is the principal exception), most of the workers in agriculture are very poor and they do not farm on land that they or their families or communities control. They are a kind of rural proletariat, gaining a bare livelihood as migrant laborers, as tenants or sharecroppers, or as laborers on large estates located near their villages. As Stinchcombe ("Agricultural relations and rural class relations," *American Journal of Sociology* **67**, 165 [Sept. 1961]) and Paige ("Inequality and insurgency in Vietnam: a reanalysis," *World Politics* **23**, 24 [Oct. 1970]) suggest, these are likely to be people for whom stable and traditional rounds of life have been shaken, whose communities have lost authority, and whose sense of personal dignity and self-esteem is undermined. Perhaps it is by comparison with populations of this sort that Inkeles and Smith find more modern workers to have higher self-esteem, greater openness to change, faith in planning, and so on. Perhaps comparisons with rural communities having greater integrity and autonomy, or with independent farmers who make at least a passable living from their work, would show a different picture. Perhaps these possibilities can be explored through further analyses of data from the present study.

And comparable questions need to be asked about experiences in schools and factories. Is it, as seems plausible, and as the authors suggest, planful, routinized activities, "relative autonomy in arranging one's own work," and similar aspects of industrial employment that modernize men? Or is it simply the fact of working in "large-scale bureaucratic organizations" (p. 305)? Or is it unionization? Or is it the relation of these industrial workers to the larger political situation in these countries? We know, for example, that the political parties in these developing countries are sharply divided along lines of social class—much more so than in most of the older industrialized states. Is it the greater ease of working class parties in reaching and mobilizing industrial workers that makes the latter more aware of larger issues, of the possibility of change, and of their own potency in doing something about the conditions under which they live?

Could some of the findings be the result of the migration of more modern men to the city or of their greater tendency to seek, obtain, and retain industrial employment? Or perhaps it is not that men who are more modern in all respects arrive at the factory but men who are "more ambitious, more adventurous, and more eager to test themselves in a larger arena than that provided by the typical village square" (p. 254). Were something like this the case, the authors' results might be due to the interaction of these dispositions with factory experience rather than to industrial employment alone. One needs a longitudinal study to answer such questions. The authors do have some longitudinal data—interviews in Israel and East Pakistan with samples of the industrial workers whom they had interviewed four or five years earlier. These data show increases in OM scores over the scores originally recorded. They do not, however, address the central problems of self-selection.

Nor do the data on men who live and

work in a city but who are not employed in factories address these problems. These urban nonindustrial workers have lower scores on OM than the factory workers, but this may be due not to their lack of factory experience but to their greater ties to kinsmen and friends in the village. Perhaps these contacts insulate them from the modernizing influences that are present in their situation. At least that needs to be considered. In developing societies around the world, tradesmen, craftsmen, and artisans in the towns frequently depend for their livelihood upon trade with "country cousins."

There is also some question about the contents of the OM scale itself. As we have seen, the authors reviewed the literature on modernization and on that basis constructed items for their interview. When the interviews were in hand, they had the project's field directors and senior staff assess each question, "judging whether or not it unambiguously tapped some aspect of individual modernity as they understood the project to have defined it" (p. 86). They then worked with the 166 questions on which there was good agreement and especially with the 96 questions on which agreement was highest. These were processed to select the items that constitute the OM scales. The obvious difficulty here is that the raters, or most of them, were aware of the authors' expectation that schooling and factory experience were related to modernity. It is hard to discount the possibility that they unwittingly considered as good measures of modernity those items which they knew from examining hundreds of interviews to be answered differently by the better educated and by those with industrial jobs. The fact that such differences do occur, and that they do so in six countries, is itself of great importance, but the method of test construction does leave ambiguous the relation of scores on this instrument to theoretical representations of modernity and to "independent" variables.

There is, finally, the problem of the importance that the modernizing of their outlooks, knowledge, and skills has for the individuals themselves and for their society. On this I share the authors' feeling that the involvement of these men in more modern experiences has, on balance, been personally enhancing and not disorganizing (always remembering that the comparison may be with agricultural laborers and tenant farmers who live in dire poverty). I also share their judgment that modern organizations and societies require citizens with a modern outlook and modern skills and that evidence in this study of steady growth in such matters with each year of schooling or of industrial experience, and with exposure to the mass media, suggests how such citizens can be produced. But I also agree with the authors' conclusion that we are still at some distance from knowing what is going on and how it occurs. They have, however, greatly narrowed the places in which it seems important to look.

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Effects of a Siege

Famine and Human Development. The Dutch Hunger Winter of 1944–1945. ZENA STEIN, MERVYN SUSSER, GERHART SAENGER, and FRANCIS MAROLLA. Oxford University Press, New York, 1975. xx, 284 pp., illus. $12.95.

This review provides an excuse for adding a very minor footnote to history. In January 1945, General Eisenhower sent a polite telegram to the British military authorities requesting the reviewer's attendance at a conference in Brussels to consider nutritional measures to be taken when the Allied armies liberated western Holland. The Germans had stopped all transport, including food supplies, in early October 1944, and by the end of the year, according to intelligence reports, a state of severe famine existed, especially in the large cities. Presumably we conferred to good purpose, since recovery after the liberation in May 1945 was rapid. The only contribution I remember making, based on experience during the Bengal famine in 1943, was that it would be more important to secure ample supplies of easily assimilated food than of nutrients for intravenous administration. (I understand that large amounts of intravenous preparations were nevertheless provided, and were found more useful in the concentration camps of Germany than in Holland.)

The Dutch famine was unique, because its onset and termination could be clearly defined in time, and also because it took place in a society that habitually keeps excellent and accessible records. We know that the most dramatic effect of the famine on human reproduction was a rapid fall in the number of births to about half the previous level, probably owing to impaired fecundity (physiological capacity to reproduce); amenorrhea was widespread. In 1947, Clement Smith showed from hospital records that at the height of the famine the average weight of babies was about 10 percent below normal, and he remarked that many women gained little or no weight during pregnancy. There is, accordingly, no doubt that the famine was severe and that it affected pregnant women severely.

Years passed, and saw a growing concern about the prevalence of undernutrition and malnutrition in many countries of the world and their potentially permanent adverse effects on physical and mental development. The authors of this book, working in Columbia University and planning a study of nutrition during pregnancy in the black ghettos of New York City, realized in 1968 that it might be possible to relate the status of young adults in Holland to their experience as fetuses during the 1944–45 famine. Fortune, and the cooperative and methodical habits of the Dutch, were on their side. The famine itself had been thoroughly documented by Burger, Drummond, and Sanstead (*Malnutrition and Starvation in Western Netherlands*, General State Printing Office, The Hague, 1948). Many hospitals still retained relevant maternity records, and official demographic and mortality statistics were available. Thus it was possible to define cohorts of births by date and place and by degree of exposure to famine. The records of the Dutch military draft system made it possible to identify related groups of young adults and also provided a battery of physical and mental data for each draftee. The authors brought together the two sets of information, having shown from a sample of 2000 individuals that it was possible to match birth and military induction records for 85 percent; most of the individuals who were not matched had died or emigrated or had been exempted from military service, and only 3 percent could not be accounted for.

The effort of locating, assembling, and collating large-scale statistics of this nature requires dedication, effort, and attention to detail perhaps paralleled most closely by that of archeologists reconstructing history from buried physical relics. And this only to provide the materials; they then have to be verified, analyzed, brooded upon, tested in the light of plausible hypotheses, and finally described in intelligible prose, tabulations, and diagrams. The result seen in this book can scarcely be described as light reading, but it can be understood and enjoyed by those with minimal mathematics. The text is blessedly free from jargon.

What was the outcome? We tend to prefer "positive" results, and philosophers say that a negative cannot be proved: so it might have been gratifying if the major hypothesis—"that prenatal nutrition affects brain development, which in turn affects