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John D. Hogan, Editor  
Anna M. Craig, Associate Editor

PRODUCTIVITY: THE HUMAN FACTOR

Amitai Etzioni

Dr. Etzioni is Professor of Sociology, Columbia University  
and Director of the Center for Policy Research.  
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## INTRODUCTION

Research on the effects of human factors on productivity is a much neglected field. While "productivity is the new buzzword...[making a] rapid journey from the backwaters of economic jargon into the mainstream of political rhetoric,"<sup>1</sup> there are very few hard, established facts on its causes. Jerome M. Rosow, of the Work in America Institute, refers to it as "the productivity puzzle."<sup>2</sup> Science reports that "Everybody talks about the lag in the growth of productivity, but nobody seems to know enough to do much about it."<sup>3</sup> Hence, this presentation focuses on working hypotheses, not on a synthesis of findings. The following hypotheses seem fruitful:

- o Productivity is determined by a multiplicity<sup>4</sup> of economic, cultural, psychic and political factors. Moreover, all these factors contribute significantly to the changing productivity rates. Therefore, those who seek to explain these rates must deal with this multiplicity of factors -- and their interaction -- rather than limit their analysis to one discipline.
- o Among the noneconomic factors, an odd combination stands out as particularly important: early formative socialization and the total societal context seem more consequential to higher productivity levels than the immediate job context or later socialization -- such as supervisory style, details of organizational design or additional education. What is most consequential, in the longer run and for nationwide productivity, is the direction of society -- whether our top national priority is placed on reindustrialization or quality of life.

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1 Robert Samuelson, "A Skeptical Look at Productivity," The National Journal, Vol. 11, number 33, August 18, 1979, p. 1376.

2 Jerome Rosow, "Quality of Working Life and Productivity," Vital Speeches, Vol. 43, number 16, June 1, 1977, p. 496.

3 John Walsh, "Productivity Problems Trouble Economy," Science, Vol. 206, number 4416, October 16, 1979, p. 310.

4 On political factors in productivity -- especially the role of interest groups in slowing down productivity, which is strong in pluralistic societies and weak in former totalitarian societies such as Germany and Japan -- see Mancur Olson (forthcoming).

- o To the extent that evidence will support the preceding hypotheses, it would follow that proper selection of employees is more important than their proper education (including training); that improved matching of employees to jobs is more important than their proper education; and that job restructuring will achieve more than will those attempts aimed at changing the basic personalities of employees. I turn now to discussing, in some detail, these three lines of hypothesis-development.

#### THE ROLE OF NONECONOMIC FACTORS

Science progresses by breaking into analytic fragments the complex social phenomena it seeks to understand. The variables used to characterize each fragment are combined into analytic disciplines. Scientists find it easier to study the fragments by disregarding the other segments, as a matter of analytic convenience. This procedure is fruitful as long as one does not mistake the analytic fragments for the synthesized whole.

There is no reason to expect economic phenomena to be any less inclusive than all others. Thus, while one would expect productivity levels to be affected by the capital available to each worker, levels and modes of payments, level of R & D expenditures, and other such economic factors, one would also expect it to be affected by motivation to work, capacity to withstand frustrations and defer gratification, work ethics and other such noneconomic factors. It is hence quite understandable that when productivity is examined only from the viewpoint of one analytic discipline, its dynamics are less than fully comprehensible. Indeed, two leading economists say it is "largely a mystery,"<sup>5</sup> and Fortune reports that while it is "generally agreed that the productivity slowdown has gone through two periods with 1973 as the dividing year," two other experts "disagree as to which period is the more mysterious. Edward F. Denison... thinks he's got the first phase pretty well explained, but he finds the second one 'a mystery.' In contrast, J.R. Norsworthy, head of productivity research in the Bureau of Labor Statistics, can account to his satisfaction for most of the slowdown since 1973, but he is 'puzzled' by the earlier period."<sup>6</sup> Both focus on economic factors.

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5 Herbert Stein and Joseph Pechman, private communication.

6 William Bowen, "Better Prospects for Our Ailing Productivity," Fortune, Vol. 100, number 11, December 3, 1979, p. 70; Edward F. Denison, "The Puzzling Drop in Productivity," The Brookings Bulletin, Vol. 15, number 2, Fall 1978, p. 10-12.

## EARLY LOADING, WIDE CONTEXT

While it is reasonably safe to assume that productivity is significantly affected by psychic, cultural, social and political factors -- above and beyond sheer economic ones -- it is quite less self-evident which of these noneconomic factors affect it the most and in what ways. Hence, the following discussion is to be viewed as highly hypothetical.

My starting point is that productivity is in part determined by the predisposition the employees -- executives included -- bring to work. This suggests that the level of productivity is determined, in part, by one's motivation. (This may seem completely elementary to a lay person, but among researchers, it is often capital per employee which is stressed. Jerome Rosow notes this predisposition in management's thinking: "Deep in his gut the American manager thinks people aren't important to productivity, that it's just a question of more capital or new technology.")

By motivation, I do not mean a naked desire to work hard which is voluntarily controlled by the employee. Motivation itself reflects a large number of factors including upbringing, sub-cultures and peer pressures. Thus, to say that a poorly paid worker, protected by tenure from being fired, in a nepotistic, corrupted, disrespected civil service (say, in some parts of the bureaucracy in India) is "poorly motivated" reflects much more than the individual's "lack of will to work hard." However, whatever historically helped shape a person's productivity-predisposition, it is encountered, at any point in time, in the form of a given level of inclination to mobilize one's energies, skills and attention to the tasks at hand. This is the motivation I deal with here.

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7 For background, see Saul W. Gellerman, Motivation and Productivity (New York: American Management Association, 1963).

8 Typical among such comments, from Fortune, December 3, 1979. "One of the most important determinants of productivity growth is the stock of invested capital per worker -- the capital-labor ratio...[In] the 1973-78 period, the capital-labor ratio was the principal depressant, accounting for well over half the fallout in productivity growth."

9 "How to Promote Productivity," Business Week, number 2544, July 24, 1978, p. 151.

## SOCIALIZATION

Scholars, corporate executives, union members and national policy-makers have an important question before them: What is the relative power of socialization and contextual factors, as well as the differences between early and late socialization and between immediate versus wider contexts, in determining the employee's productivity-predisposition? Socialization refers to the process by which new members of society acquire the habits, attitudes, and modes of thinking prevalent in their society and the particular segment they live within. For immigrants this involves a process of change of personality; for newborns, the initial personality must be formed. Socialization begins at birth and never ceases thereafter. The question, though, is when does the most "basic" -- i.e., consequential -- period take place, and how reversible are its outcomes?

In America, it was long popular to maintain that socialization was highly effective -- that given the resources, the dedication and time, everyone could be educated to become most anything. (There was little evidence to back this up, but the feeling was part of the general cultural optimism.) Recently, however, a growing body of literature has come to question this assumption. This counter hypothesis emphasizes "early loading" -- i.e., an emphasis on basic personality traits that are acquired early in life and difficult to change later. (Another hypothesis is that these traits are genetically caused, a line I do not explore here because if productivity is genetically determined, which I do not believe, dealing with it would require such a radical departure from all policies that a whole different line of analysis treatment would have to be developed.)

In line with this more recent line of work, I suggest that the productivity-predisposition, to the extent that it is affected by socialization, is more affected by early socialization -- i.e., it is a basic personality trait and is less affected by later factors than often believed. Within this context, the capacity to defer gratification, or to withstand frustration, might be the single most relevant factor in conjunction with the ability to mobilize and focus energy, to carry out a project. This ability might be affected very early by such factors as feeding schedules (frequent or more distant, at infant's will, etc.), coddling behavior (is the infant frequently picked up, carried, caressed, etc.), the age and modes of toilet training and many other such parenting factors at work between ages 0 to 2.<sup>10</sup> These may be reinforced by early discipline patterns

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<sup>10</sup> Many of these have been rejected as single factor theories; I suggest that they play a role together with many other factors.

in the following years. At issue is more than lax versus strict discipline; consistency, positive versus negative reinforcements (i.e., rewards versus punishment), orientation to rules and authority, etc. may also be relevant. The basic results of these socialization factors may be well entrenched by the time the child enters the first grade.

### Family Background

While this is an area about which much has been written and speculated, because of difficulties in separating socialization from other environmental factors and because of deep differences among disciplines (e.g., psychoanalysis vs. experimental psychology), existing cumulative evidence does not allow one to determine at this stage to what extent the productive predisposition is a basic personality trait. There is, though, one major significant body of data which is indirectly relevant: multiple regression analysis by Christopher Jencks, et al., of 11 massive surveys which asked what determined income and occupational success in America during the early 70's for males, age 25-60.<sup>11</sup> While success is not a direct measure of productivity, it is illuminating that family background is clearly important. If one is brought up in the "right" family, this will tend to be translated into an economic and social advantage. The family goes a long way in determining what sort of occupation a person has -- it accounted for 48% of the variance in occupational status -- and the income he earns -- 15% to 35% of the variance in the annual amount of earnings. Pre-school upbringing and background factors are roughly equal to what all of the education to follow constitutes.

Before Jencks, "family background" brought to the social science mind the position in the societal pyramid to which one was born: lower, middle or upper class; farm or city; black or white. The less advantaged the position, the harder the climb. And, indeed 13 such "demographic" variables explained about two-thirds of the family-effect, but about a third was left to be explained by other family factors. These help explain why persons born to the same group -- say white, middle class, in a suburb of a given city -- still differ significantly in their achievements, i.e., differences in values to which the family subscribes, the habits it passes on to the children, etc. Education was also identified as an important factor; however, Jencks et al. show that the amount of education a person acquires is more important than

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11 Christopher Jencks, et al., Who Gets Ahead?: The Determinants of Economic Success in America (New York: Basic Books, 1979).

its quality. This, in turn, hinges on stamina more than anything else. Stamina, in turn, is advanced -- or neglected -- by the family. Jencks' study was not designed to zero-in on these family factors; many questions as to how the family works are left unanswered. One thing is clear: the family affects children not just via cognitive channels -- such as who reads or the size of one's vocabulary -- but also via the transmission of noncognitive traits such as ambition and stamina.

### Schooling

When it comes to schooling, early socialization seems to be more consequential than later efforts. Thus, after sixth grade, changes in test performances no longer correlate with changes in occupational achievements in adulthood; the die, seemingly, has been cast.<sup>12</sup>

We do not have similar data about productivity predispositions. However, the frequent complaints about the inefficiency of job-training programs, especially as they concern working habits and other such factors, may reflect the fact that productivity predisposition is determined relatively early. As noted in the Vocational Education Study being conducted by the National Institute of Education:<sup>13</sup>

During the height of the war on poverty it was a common observation of those employers who were making a good-faith effort to train disadvantaged workers that it was easy to teach cognitive job skills (how to run the machine), but next to impossible to teach good work habits (show up on time, do not cuss the boss, work hard, etc.). Since poor work habits tended to drive out good work habits, employers found that poor work habits, if tolerated, spread to the rest of the labor force. Hence, some firms even went so far as to establish what were essentially entry factories to provide a place for teaching good work habits where the teaching would not corrupt the rest of the labor force. In general, this is

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12 Another study shows that work values are transferred from parents to their children. I.P. Wighting, et al., "Generational Differences in Work Values Between Parents and Children," Journal of Vocational Behavior, Vol. 12, 1970, pp. 245-260.

13 Lester Thurow, "Vocational Training as a Strategy for Eliminating Poverty," The Planning Papers for the Vocational Education Study, publication number 1, The National Institute of Education, April 1979, p. 327.

such an expensive way to teach good work habits, or to determine who has good work habits, that few employers are willing to use it in any wholesale way. Most of the employers who had such training plants in the 1960's have in fact abandoned them as too expensive.

All this does not mean that one's productivity-predisposition is not affected later but that such changes seem to be relatively smaller and harder to attain.

What the families do, in turn, is not determined in isolation, at will, in family councils or from parents' ideas. The socialization the family provides reflects the total societal structure: the changing values -- not only those concerning work ethics, but optimism, success, discipline, authority, etc., and their acceptance in sub-cultures (different in most inner cities from most suburbs, among ethnic groups, etc.). These factors become clearest when we compare America over the decades or contemporary U.S.A. to Japan, the United Kingdom and others.<sup>14</sup> In Japan, the average auto worker turns out 40 to 50 cars a year as compared to 25 in the U.S.A. A Japanese steel worker turns out 421 tons a year compared to 250 in the U.S.A.<sup>15</sup> A British study found workers at construction sites "leaning on the shovel" and "walking around" more than their fellow Americans.<sup>16</sup> Here, the central hypothesis is that the weakening of the productivity predisposition reflects a weakening of commitment to the success culture and the economic growth society. It would follow that until these commitments are reaffirmed or replaced, families -- as the main, early socialization agent -- will continue to instill a weak predisposition. Schools, with their growing tendency to disassociate rewards from achievements (e.g., grade inflation), further reinforce this ill-disposition to productivity.

### Social Structure

Predispositions are worked out differently according to the social context. Aggression, it is often said, makes one person a butcher, the other a District Attorney. What does the social structure add?

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14 For Japan, see Ezra Vogel, Japan as Number One: Lessons for America (Cambridge: Harvard University Press, 1979).

15 Hisashi Owada, on leave from the Japanese Foreign Ministry, to Hobart Rowen, "Yankee Ingenuity Come Home," The Washington Post, November 1, 1979.

16 "Leaning on a Shovel," The Economist, December 18, 1976, Vol. 261, #6955, p. 98.

Here, a distinction enters which is similar to early versus late social loading; it concerns a relatively more immediate context versus a wider one. Immediate contexts encompass supervisory habits, team culture and work set-up. Wider context concerns are industrial policy, values, and the state of the economy. It is my hypothesis that the wider context is more important than the immediate one and not only affects the socialization agents (families and schools), which in turn form the productivity predisposition, but also provides the context within which a productivity-predisposition can or cannot be nurtured. Thus, if employees come to work with a relatively productive predisposition, they may still be ineffectual if the country is torn apart by riots, strikes, work stoppages and a general malaise. And even if undisposed workers mobilize themselves -- as, say, during the Blitz in London -- when circumstances are less extreme, I hypothesize that wider context factors -- such as the level of inflation, level of optimism, political stability, etc. -- are more consequential than immediate factors because the wider factors affect the immediate context, not vice versa. Thus, the general mood of a country and the level of inflation affect the mood and expectations of the employees of all industries, while whatever specific changes most individual corporations make in pay scales have only little effect on the nationwide economy or mood. This is not to suggest that the immediate context is unimportant, only that it is overstated in the recent fashionable studies of organizational redesign.

As elaborated elsewhere, I see the U.S.A. -- for economic, cultural, psychic and political reasons -- in a stage of underdevelopment. Capital formation, the infrastructure, and work ethics have all eroded over the last decade.<sup>17</sup> In the productivity context, the single most important factor for the 1980's will be whether the U.S.A. will dedicate itself to reindustrialization, choose some other core project, or continue to drift to lower levels of development.<sup>18</sup> This, in turn suggests that an individual supervisor, executive or labor leader who is concerned about productivity is still

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17 On the changing work ethics, see Daniel Yankelovich, "The New Psychological Contracts at Work," Psychology Today, Vol. 11, number 12, May 1978, pp. 46-50. See also his presentation to the National Conferences on Human Resource Systems, Dallas, Texas, October 25, 1978.

18 Amitai Etzioni, "Choose We Must," in The Individual and the Future of Organizations, Vol. 9, the College of Business Administration, Georgia State University, forthcoming.

constrained by what he can achieve within a given societal context. Thus, if the society is preoccupied with non-work and non-productive matters, it sets a counter context; on the other hand, if it is greatly concerned with reindustrialization, it sets a supportive context.

### SPECIFIC STEPS

Assuming for a moment that evidence would support the hypothesis that the productivity-predisposition is determined relatively early and by the wider context, what policies should follow?

#### Non Personalization

Focus one's efforts to generate higher levels of productivity on non-personal factors: those which are more malleable than personality -- e.g., increase capital per capita, add to R&D expenditures, advance deregulation, etc. -- and which interact with the productivity-predisposition.

#### Selection Procedures

Improve the selection procedures -- i.e., those which determine whom a company hires. The logic here is elementary: the less one relies on on-the-job education and incentive systems to try to build up the productivity-predisposition, the more one must "buy" a high "ready made" level. To put it differently, the less one seeks to rely on late-socialization, the more important selection becomes. (Thus, many of the educational programs considered among the best, such as those of the Harvard Business School and leading liberal arts colleges, actually reflect, in part, the selection of better prepared and qualified entering students.)<sup>19</sup>

The question might be asked: If some corporations are able to select those more predisposed for productivity, would the less productive not just go to other corporations so that there would be no net gain in national productivity? The answer: Not all tasks require the same level of predisposition. A higher level is needed for an assembly line worker than for a peacetime naval officer; the predisposition of an air traffic controller is more important than that of a security guard in a low crime area. Hence, to the extent those most predisposed to productivity will be "selected" for the positions most in need, there will be a gain in the productivity of the total labor force.

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<sup>19</sup> For additional discussion and studies on selection, see Amitai Etzioni, A Comparative Analysis of Complex Organizations, Revised Edition (New York: The Free Press, 1975), pp. 254-264.

What is more important is that the more such selection is undertaken, the more the productivity will be recognized and rewarded, and the more "feedback" the selection will have on the family and schools. And conversely, the more hiring is non-selective, with hopes to shape the predisposition at work, the less families and schools will feel required to exert their influence.

### Matching People and Jobs

Improved intracorporate matching is basically the same idea applied to the distribution of the labor force within a job place. In a study conducted through the Center for Policy Research we surveyed people according to their "bureaucratic predisposition" -- the ability to abide by institutional rules -- using questions such as the following: "Often, the only thing wrong with breaking a rule is getting caught"; "It seems to me that most rules on the job are not really needed"; and "The best jobs for me are ones with set hours."<sup>20</sup> Next, we scored jobs as to their bureaucratic requirements -- e.g., typing pools are more "bureaucratic" than secretarial positions. We hypothesized that the better the match between the person and the job (rather than merely scoring high), the less turn-over and absenteeism is to be expected. The data tend to support this proposition though the correlations are not high.

### Restructure the Job Rather Than the Person

While restructuring jobs is expected, on the average, to be much more difficult and costly than better selection and matching, it is expected to be much easier and less costly than changing deeply ingrained work habits, energy levels and other employee basic personality traits. The literature on job restructuring is extensive,<sup>21</sup> and our purpose here is not to review it but to place it in the context of our approach. To wit: I expect such job and

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20 Marvin Sontag, Richard Hansen, Sally Hillsman Baker and Amitai Etzioni, "Tolerance for Bureaucratic Structure: A Scale" (New York: The Center for Policy Research, 1970). See also, Marvin Sontag, Richard Hansen, Sally Hillsman Baker, and Amitai Etzioni, "Tolerance for Bureaucratic Structure," Human Relations, Vol. 26, 1973, pp. 775-780.

21 For an overview, see William N. Penzer, Productivity and Motivation Through Job Engineering (New York: American Management Association, 1973). See also Meyer Michael Cahn and John H. Zenger, "OD and Productivity," Journal of Applied Behavioral Science, Vol. 14, number 1, 1978, pp. 99-110.

organizational restructuring to be more cost-effective and psychologically rewarding if all the changes are taken jointly rather than piecemeal.

### CONCLUSION

Much research on the noneconomic factors impinging on productivity via the productivity-predisposition -- i.e., the family and school, the respective roles of early and later socialization, and the immediate versus more encompassing social context -- remains to be done. The purpose of the preceding hypotheses is to prod such studies -- and not to substitute a group of hypotheses for facts. That would be a most unproductive use of theoretical analysis.