THE CHANGING TOLERANCE FOR INCOME INEQUALITY IN THE COURSE OF ECONOMIC DEVELOPMENT *

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WITH A MATHEMATICAL APPENDIX

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A drastic transvaluation of values is in process in the study of economic and political development. It has been forced upon us by a series of disasters that have occurred in countries in which development seemed to be vigorously under way. The civil war in Nigeria and the bloody falling apart of Pakistan are only the most spectacular instances of such "development disasters."

As a result, one reads with increasing frequency pronouncements about the bankruptcy of the "old" development economics, with its accent on growth rates, industrialization, and international assistance, and about the need for a wholly new doctrine that would emphasize income distribution, employment, and self-reliance.[1]

The present paper is not written with the intention of stemming this tide, which surely represents a wholesome reaction and response to current problems. It is grounded, however, in the strong feeling and insistent recollection of one participant observer that the intellectual enthusiasm for development in the fifties and early sixties reflected elements of real hopefulness that were then actually present in many developing countries. What was not correctly perceived was the precarious and transitory nature of that early hopeful and even exuberant phase. This essay, then, is an effort to understand

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1. For a particularly forceful statement of this sort, see Mahbub ul Haq, "Employment and Income Distribution in the 1970's: A New Perspective," *International Development Review* (Dec. 1971), 9–13.

both where we were right and where we went wrong. It will proceed on a fairly abstract level, reach out into several fields other than economics, and stray, on occasion, from the immediate experience and concern that are at its origin.

I. Gratification over Advances of Others: The Tunnel Effect Introduced

I shall start by baldly stating my basic proposition. In the early stages of rapid economic development, when inequalities in the distribution of income among different classes, sectors, and regions are apt to increase sharply, it can happen that society's *tolerance* for such disparities will be substantial. To the extent that such tolerance comes into being, it accommodates, as it were, the increasing inequalities in an almost providential fashion. But this tolerance is like a credit that falls due at a certain date. It is extended in the expectation that eventually the disparities will narrow again. If this does not occur, there is bound to be trouble and, perhaps, disaster.

To make this proposition plausible, I shall first argue by analogy. Suppose that I drive through a two-lane tunnel, both lanes going in the same direction, and run into a serious traffic jam. No car moves in either lane as far as I can see (which is not very far). I am in the left lane and feel dejected. After a while the cars in the right lane begin to move. Naturally, my spirits lift considerably, for I know that the jam has been broken and that my lane's turn to move will surely come any moment now. Even though I still sit still, I feel much better off than before because of the expectation that I shall soon be on the move. But suppose that the expectation is disappointed and only the right lane keeps moving: in that case I, along with my left lane cosufferers, shall suspect foul play, and many of us will at some point become quite furious and ready to correct manifest injustice by taking direct action (such as illegally crossing the double line separating the two lanes).

It is easy to translate this situation into the language of welfare economics.[2] An individual's welfare depends on his present state of contentment (or, as a proxy, income), as well as on his expected future contentment (or income). Suppose that the individual has very little information about his future income, but at some point a few of his relatives, neighbors, or acquaintances improve their economic or social position. Now he has something to go on: expecting that

2. See Mathematical Appendix for a more formal statement and development of the argument.

his turn will come in due course, he will draw gratification from the advances of others — for a while. It will be helpful to refer to this initial gratification as the "tunnel effect."

This is a simple and, I believe, immediately persuasive proposition. While it has to be formulated with greater care so as to spell out the conditions under which it does or does not hold, perhaps I shall be allowed to dwell on it and to advertise its novelty. The tunnel effect operates because advances of others supply information about a more benign external environment; receipt of this information produces gratification; and this gratification overcomes, or at least suspends, *envy*. Though long noted as the most uninviting of the seven deadly sins because, unlike lust, gluttony, pride, etc., it does not provide any initial fun to its practitioners, envy is nevertheless a powerful human emotion. This is attested to by the writings of anthropologists, sociologists, and economists, who all have proclaimed, in general quite independently of one another, that if you advance in income or status while I remain where I was, I will actually feel worse off than before because my relative position has declined.

In economics this has been argued as the "relative income hypothesis," according to which the welfare of an individual varies inversely with the income or the consumption of those persons with whom he associates.[3] In sociology the topic has been profusely studied under the heading of "relative deprivation." While this term is sometimes used to denote any lag of real accomplishments behind expectations, its predominant meaning refers to the feelings experienced by a person or group of persons who are falling behind others or who see others catch up with them in regard to income, influence, and status.[4] Finally, anthropologists, who are less given

3. James S. Duesenberry, *Income, Saving and Theory of Consumer Behavior* (Cambridge: Harvard University Press, 1949), Ch. III. A clear diagrammatical exposition is in Harvey Leibenstein, "Notes on Welfare Economics and the Theory of Democracy," *Economic Journal*, LXXII (June 1962), 300–05. Leibenstein considers three possible ways in which individuals make comparisons between their income and that of others: "(1) *Pure* Pareto comparisons in which each individual takes into account his own income but no one else's; (2) the 'share of the pie' comparisons in which each individual takes into account the income distribution from a relative point of view but not the absolute magnitude of his income; and (3) the 'compromise Pareto comparison' in which individuals take into account both the absolute magnitude of their income and their relative income position" (p. 301).

The "pure Pareto comparison," where an individual's utility is not decreased by the improving fortunes of his neighbor as long as his own income does not change, is a limiting case in this scheme. There is no room in it for the possibility of a positive interaction between my and my neighbor's utility.

4. For an excellent survey and bibliography, see Thomas F. Pettigrew, "Social Evaluation Theory: Convergences and Applications," *Nebraska Sym-*

to using jargon, speak unabashedly of the envy caused by isolated advances of individuals in small, poor communities; they view many institutions, such as fiestas, gift giving, and appointment of the rich to financially burdensome honorary positions, as social mechanisms designed to lessen the potentially destructive impact of envy on personal bonds and social cohesion.[5]

This is no doubt an impressive body of converging writings, and massive data have been gathered in their support. But relentless pursuit of this line of reasoning and research may have led to a trained incapacity to perceive the tunnel effect and its importance in a number of contexts.

A preliminary way of rekindling perception is to reverse the signs of the phenomenon under study. Suppose my neighbor or acquaintance, far from improving his position, experiences a bad setback such as losing his job while I am keeping mine: Do I now experience the opposite of relative deprivation, that is, the satisfaction of relative enrichment? This is unlikely, for one thing, because envy, mortal sin though it may be, is an altogether gentle feeling if compared to *Schadenfreude*, the joy at someone else's injury, which is the emotion that would have to come into play to make me happy in this situation. The more important reason is the tunnel effect in reverse: once again I shall take what is happening to my neighbor as an indication of what the future might have in store for me, and hence I will be apprehensive and worried — less well off than before, just as he. This reaction is well-known from the onset and spread of depressions.[6]

The opposite reaction will surely take place when the economy experiences a cyclical upturn. Now the news that someone I know is getting his job back while I am still unemployed gives me a pleasure that overwhelms any possible envy, for the event is hailed

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posium on Motivation, 1967 (Lincoln: University of Nebraska Press, 1967), particularly pp. 261–73. The concept was introduced by S. A. Stouffer and his associates in the well-known monumental study of the American soldier in World War II (*The American Soldier, Vol. 1, Adjustment During Army Life*; Princeton, N.J.: Princeton University Press, 1949). See below note 9, p. 552.

For a development of the concept in its narrower and more useful meaning, see W. G. Runciman, *Relative Deprivation and Social Justice* (London: Routledge and Kegan Paul, 1966). The wider meaning, which practically equates relative deprivation with any form of discontent, is extensively used in Ted Robert Gurr, *Why Men Rebel* (Princeton, N.J.: Princeton University Press, 1970).

5. See Ch. 7 entitled "The Fear of Envy" in George M. Foster, *Tzintzuntzan: Mexican Peasants in a Changing World* (Boston: Little, Brown, 1967); also Frank Cancian, *Economics and Prestige in a Maya Community* (Cambridge, Mass.: Harvard University Press, 1963), p. 135 and *passim*.

6. See, however, note 6, p. 557.

as a confirmation that better times are under way for me also. This is close to the situation in countries that experience a vigorous surge of development.

As long as the tunnel effect lasts, everybody feels better off, both those who have become richer [7] and those who have not. It is therefore conceivable that some uneven distribution of the new incomes generated by growth will be preferred to an egalitarian distribution by all members of the society.[8] In this eventuality, the increase in income inequality would not only be politically tolerable; it would also be outright desirable from the point of view of social welfare.

II. Some Evidence

But this possible consequence of the tunnel effect is a theoretical curiosum, whereas the effect itself definitely is not. In a number of countries its reality has impressed itself on careful observers. Interestingly enough, it was often stumbled upon by researchers who were looking for the opposite phenomenon, such as seething discontent and revolutionary fervor among the urban poor, and were surprised and sometimes not a little disappointed at what they actually found.

The following comments on a sample survey carried out over a decade ago in the *favelas* of Rio de Janeiro are a first case in point:

> One way of testing the favelado's sense of sharing in what goes on in the nation is to ascertain the extent to which he perceives national economic growth as producing real gains to himself. When asked in February of 1961 whether things had improved, had remained about the same, or had become worse for him during the last five years, nearly one out of two favelados replied that his present situation is worse. Another three out of ten found that their situation remained much the same. . . . The general sensation that things have not improved noticeably for themselves has not created any great disillusion among favelados with the idea of industrialization as a road to prosperity. The favelado does not deny that the nation's industrial growth has produced benefits for people like himself; he only states that his own situation has not changed appreciably. Thus, when asked immediately after the above question whether the growth of industry had benefited people like themselves, most answered affirmatively. Their explanation, however, was almost entirely in terms of the expansion of job opportunities *for others* — friends, acquaintances, or simply other Brazilians.[9]

7. See, however, Section III below.
8. See Mathematical Appendix for an exploration of this case.
9. Frank Bonilla, "Rio's Favelas: The Rural Slum within the City," *The American Universities Field Staff Reports Service*, Vol. VIII, No. 3, New York, 1961, pp. 8–9.

Writing also in the early sixties, a well-known Mexican political scientist coined the term "hope factor" to explain what by then amounted to an astonishingly long record of political stability in his country.[1] Even after this record had been shattered by the events of 1968 and the Tlatelolco massacre, another observer wrote:

> Even though the perspectives of individual advance are limited, there is one reason for which one finds less disappointment with the development process among lower-class persons of all sectors than might be expected. With education spreading rapidly and with migration on the increase, there are a number of relatively easy ways of achieving personal advance. Thus even when an individual has been unable to get a new job or in general has not improved his income or position, it is nevertheless probable that *he knows one or several persons* who have been successful in these respects. . . .[2]

The contrast between the objective situation of low incomes, poor working conditions, and general deprivation, on the one hand, and the subjective mood of hopefulness, on the other, were also found to be characteristic of the Puerto Rico of the late fifties:

> We suggest that Puerto Ricans feel far better off than the objective facts of incomes, education and occupations show. . . . Puerto Ricans perceive the existing marked inequalities. Yet they do not feel particularly depreciated by them, and certainly not overwhelmed by them; indeed, on some counts, their views of life and how good it is have often seemed to ignore the objective situation . . . on every visible count, these people at all levels are full of hopes for the future.[3]

In an article dealing with the continent as a whole, two Latin American sociologists catch the essence of these situations by asserting that ". . . the patterns of deferred social mobility, even though somewhat mythical, are nonetheless effective."[4]

Finally, we shall quote some revealing personal remarks about the general atmosphere of countries where mid-twentieth-century style, capitalist development suddenly "broke cut." They come from an American anthropologist who reminisces about her stay in Venezuela, in an article in which she gives a sympathetic account of a recent trip to Cuba:

1. Pablo González Casanova, *La democracia en México* (Mexico: Era, 1965, popular edition), p. 133.
2. David Barkin, "La persistencia de la pobreza en México: un análisis económico estructural," *Comercio Exterio*, Banco Nacional de Comercio Exterior, México, Aug. 1971, p. 673 (my translation and italics).
3. Melvin M. Tumin with Arnold Feldman, *Social Class and Social Change in Puerto Rico* (Princeton, N.J.: Princeton University Press, 1961), pp. 165–66.
4. Fernando Henrique Cardoso and Jorge Luis Reyna, "Industrialization, Occupational Structure, and Social Stratification in Latin America," in Cole Blasier, ed., *Constructive Change in Latin America* (Pittsburgh: University of Pittsburgh Press, 1968), p. 51.

I thought about what I had seen in Cuba, and about Venezuela, and about my own country. . . . I thought about how when I went to Venezuela, I felt that for the first time I realized something about my own country which I had not previously seen there: the idealism which is inherent in what I had experienced [in the United States] as materialism and individual self-seeking. I saw that for Venezuelans, for whom economic development had just begun . . . the democratizing of material consumption and the opening up of opportunities — for those able to seize them — was a truly exciting and liberating idea.[5]

This passage is of particular interest, first, because it sensitively renders the feeling of the early exuberant phase of development during which the tunnel effect operates; and, secondly, because it illustrates at the same time the considerable reluctance of social-justice-minded intellectuals to perceive the effect — it just goes too much against the grain of any but the most honest to speak of this deplorable "false consciousness" or of that vulgar frontier atmosphere as an "exciting and liberating idea"! Moreover, social scientists live in an intensely competitive atmosphere in which envy and "relative deprivation" are far more prevalent than hopefulness caused by someone else's advance; and although one hesitates to make these ad homines points, they may help explain why the tunnel effect, though widely noted, has not been dealt with in a systematic way in either economic or sociological theory.

III. Consequences for Integration and Revolution

A brief digression is in order. The various descriptions of the "hope factor" reported in the previous section strongly suggest that the subject of this paper shades over into a topic familiar to political sociologists: the effect of social mobility on political stability and social integration. This relationship has usually been examined from the point of view of the reactions of the socially mobile themselves, while our focus has thus far been on those who are left behind. With respect to the upwardly mobile, the economist, with his touching simplicity, would tend to think that there is no problem: being better off than before, these people are also likely to be more content with the world around them. Social history has shown, however, that matters are far more complicated: as de Tocqueville already noted, the upwardly mobile do not necessarily turn into pillars of society all at once, but may on the contrary be disaffected and subversive for a considerable time. The principal reason for this sur-

5. Lisa Peattie, "Cuban Notes," *Massachusetts Review* (Autumn 1969), 673–74.

prising development is the phenomenon of partial and truncated mobility: the upwardly mobile who may have risen along one of the dimensions of social status, such as wealth, find that a number of obstacles, rigidities, and discriminatory practices still block their continued ascent, particularly along other dimensions, as well as their all-round acceptance by the traditional elites, and consequently they feel that in spite of all their efforts and achievements, they are not really "making it." [6] Only as social mobility continues for a long period, and the traditional system of stratification is substantially eroded as a result, will the upwardly mobile become fully integrated — or "coopted."

Discrimination against *nouveaux riches* by the older elites is by no means the only reason for which the upwardly mobile may be critical of the society in which they live and advance. A more charitable interpretation would point to the possibility that convictions about social justice, once formed, acquire a life and staying power of their own so that they are not necessarily jettisoned when pressing personal problems of material welfare have been solved — not, in any way, until after a decent time interval.

This dynamic of the socially mobile is thus the reverse of the one that has been suggested here for those who are left behind: during a first and all-round paradoxical phase, frustration and continued alienation are the lot of the upward bound, while the nonmobile derive satisfaction from the anticipation that matters are bound to improve pretty soon. This earlier conclusion of ours can be maintained as the nonmobile see only the improvement in the fortunes of the mobile and remain totally unaware of the new problems being encountered by them. In a second phase there may then take place a symmetrical switch: the upwardly mobile become integrated, whereas the nonmobile lose their earlier hope of joining the upward surge and turn into enemies of the existing order. It is quite unlikely, however, that the beginning of the second phase will coincide for the two groups. Noncoincidence of these two changeovers will obviously be the norm. The upwardly mobile may become integrated, while the left-behind ones are still experiencing the tunnel effect. Alternatively and more interestingly, the nonmobile may experience the turnaround from hopefulness to disenchantment,

6. For an excellent survey with particular attention to this problem, see Gino Germani, "Social and Political Consequences of Mobility," in N. Smelser and S. M. Lipset, eds., *Social Structure and Mobility in Development* (Chicago: Aldine, 1966), pp. 371 ff. It is also possible, of course, that aspirations, once aroused, will outrun achievements, but this explanation of the discontent of the upwardly mobile is far less convincing than the one mentioned in the text.

while the mobile are still disaffected. This last situation clearly contains much potential for social upheaval. Its possible occurrence might even qualify as a theory of revolution.[7] At this point, however, I shall abandon the matter to the historians for I must return to the tunnel effect and its reversal.

IV. From Gratification to Indignation

As was pointed out, gratification at the advances of others arises under the tunnel effect not from benevolence or altruism, but strictly from an expectational calculus: I expect that my turn to move will soon come. Nonrealization of the expectation will at some point result in my "becoming furious," that is, in my turning into an enemy of the established order. This change from supporter to enemy comes about purely as a result of the passage of time — no particular outward event sets off this dramatic turnaround. In this respect, the theory of social conflict here proposed is quite distinct from the "*J*-curve" hypothesis, which attributes revolutionary outbreaks to a sudden downturn in economic performance coming after a long upswing.[8] Such a downturn no doubt increases the likelihood of commotion, but it is by no means indispensable. Providential and tremendously helpful as the tunnel effect is in one respect (because it accommodates the inequalities almost inevitably arising in the course of development), it is also treacherous: the rulers are not necessarily given any advance notice about its decay and exhaustion, that is, about the time at which they ought to be on the lookout for a drastically different climate of public and popular opinion; on the contrary, they are lulled into complacency by the easy early stage when everybody seems to be enjoying the very process that will later be vehemently denounced and damned as one consisting essentially in "the rich becoming richer." [9]

7. It comes close to satisfying the criterion the French historian Ernest Labrousse has suggested for the arising of revolutionary situations: namely, that "the vast majority of the country is united in a total rejection of existing society and of the reigning order of things." Richard Cobb, *A Second Identity: Essays on France and on French History* (London: Oxford University Press, 1969), pp. 272–73.

8. James C. Davies, "Toward a Theory of Revolution," *American Sociological Review*, XXVII (Feb. 1962), 5–19.

9. It is tempting to suggest a reinterpretation, along the foregoing lines, of the famous and paradoxical findings about the morale in the American armed forces during World War II. While wartime promotions had of course been much more prevalent in the Air Corps than in the Military Police, the survey conducted by Stouffer and his associates found more frustration over promotions in the former than in the latter. This finding has been the origin and one of the mainstays of the theory of relative deprivation. The study

Semantic inventions and inversions are perhaps the best portents of the turnaround. To give an example: in the fifties the term "pôle de croissance" (growth pole), coined by François Perroux, was widely used for the growing industrializing cities of the developing countries. At some point during the next decade, this expression, which suggested irradiation of growth, gave way to a new term, "internal colonialism," which was now said to be practiced by these same cities with regard to their zones of economic influence.

V. The Tunnel Effect: Social, Historical, Cultural, and Institutional Determinants of its Strength

In what kind of societies does the tunnel effect arise and gather strength? What are the conditions under which it will last for a substantial time period or, on the contrary, decay rapidly and turn into the opposite, namely disappointment, alienation, and outrage at social injustice? Answering this question is crucial for bringing our hypothesis down to earth and for ascertaining its empirical and heuristic usefulness.

For the tunnel effect to be strong (or even to exist), the group that does not advance must be able to empathize, at least for a while, with the group that does. In other words, the two groups must not be divided by barriers that are or are felt as impassable. Thus, the fluidity or rigidity of class lines will have an obvious bearing on the intensity of the tunnel effect.

But stratification according to social class is a distinction of limited usefulness for our purpose. However unevenly economic growth proceeds, any strong advance is likely to mean gains or new and better jobs for members of several different classes. One might therefore conclude that the tunnel effect will always come into being as, within each social class, those who are not advancing empathize initially with those who are. But this need not happen if

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argued that Air Corps promotions, though frequent in comparison with those in the other branches, lagged in relation to expectations and aspirations aroused within the Corps by the actual promotions of those who made rapid careers. While other social scientists have later proposed different explanations, not enough attention has perhaps been devoted to the time dimension. The survey was taken rather late in the war, in 1944. Is it not likely that if a similar survey had been taken earlier, the finding would have confirmed the common-sense expectation that promotion morale was higher in the Air Corps than in the Military Police? Early in the war the rapid advances of some most probably reinforced morale in line with the tunnel effect; only later on, as the various members of the Air Corps reached their level and failed to achieve quite what they had been led to expect, did frustration take over. See S. A. Stouffer *et al.*, *op. cit.*, pp. 250 ff.

each class is composed of ethnic or religious groups that are differentially involved in the growth process. Hence, the contrast between fairly unitary and highly segmented societies is particularly relevant for our topic. If, in segmented societies, economic advance becomes identified with one particular ethnic or language group or with the members of one particular religion or region, then those who are left out and behind are unlikely to experience the tunnel effect: they will be convinced almost from the start of the process that the advancing group is achieving an unfair exploitative advantage over them. The nonmobile group may thus make the prediction opposite to that implied in the tunnel effect: as a result of another group's advance, it will expect to be *worse* off. The possibility of this reaction will be discussed in the next section. In any event, it appears that highly segmented societies will or should eschew strategies of development that are politically feasible elsewhere because of the availability of the tunnel effect.

More concretely, the capitalist road to development appears to be particularly ill-suited for highly segmented societies; if it is followed there, it will require a far greater degree of coercion than it did in the fairly unitary countries in which capitalist development scored its historic successes. On the other hand, rejection of the capitalist road does not yield a ready proven alternative, for the centralized decision making typical of socialist systems is unlikely to function at all well in segmented societies.[1]

A variant of a segmented society in which economic progress becomes largely identified with one domestic segment is a society where most emerging economic opportunities are created or seized by foreigners. Once again, the tunnel effect will not prosper in such a situation. The greater the role of foreign capital and of foreign skilled personnel in the development process, the less expectation of eventual participation in it will there be on the part of the local population, including large parts of the local elites. Hence, tolerance for the emerging inequalities of income will be low, and the need for coercion to maintain social and political stability correspondingly high, even at an early stage of the process.

In passably homogeneous societies where resources are largely owned domestically, the tolerance for economic inequalities may be quite large as no language, ethnic, or other barrier keeps those who are left behind from empathizing with those who are "making it."

1. For a detailed argument, see the case study of centralized vs. decentralized decision making in a segmented society (rail vs. road in Nigeria) in my *Development Projects Observed* (Washington, D.C.: Brookings, 1967), pp. 139–48.

It seems that, once again, "to him who hath shall be given," for the country that enjoys the manifold advantages of a nonsegmented citizenry gains thereby the additional latitude of being able to develop without having to impose the serious and perhaps crippling constraints arising from the need to make all portions of the community advance at a roughly even pace.

On the other hand, the greater tolerance of these more homogeneous countries for inequality has a real and possibly fearful price. As we know, the greater the tolerance, the greater is the *scope* for the reversal that comes once the tunnel effect wears off (unless the inequalities are corrected in time). In this fashion a somewhat counterintuitive conclusion is reached: the more homogeneous the country, the more prone will it be to violent social conflict in the course of development unless its leadership is uncommonly perceptive and able.[2] Once again I must leave it to the historians to ascertain whether any empirical sense can be made out of this purely deductive proposition; it might be mentioned, however, that part of the evidence favoring the hypothesis could come not from actual revolution, or similar civil strife, but from protracted lower class alienation such as is found in Argentina, France, and Italy.

National homogeneity is ordinarily defined in terms of static characteristics such as unity of race, language, and religion. But the most effective homogenizing agent is perhaps an intensive historical experience that has been shared by all members of a group.[3] Wars and revolutions typically can be frequently such experiences, and the tunnel effect is therefore at its most potent in postwar and postrevolutionary societies. The result can be an irony-laden historical cycle: revolutions are often made to eradicate a certain kind of inequality, but after such a revolution and because of it, society will have acquired a specially high tolerance for new inequalities if and when they arise. A particularly apt illustration is the Mexican Revolution and its subsequent "betrayal" through the sharply uneven development of recent decades. Similarly, the egalitarian or, rather, "born equal" heritage of the United States — the collective leaving behind

2. This point is similar to one that can be made about the economic consequences of the size of countries. While the literature of economic development has — quite properly — stressed the advantages of size, particularly in connection with import-substituting industrialization, large size also means that it is possible for a large backward region to fall cumulatively and hopelessly behind — as the progressive region absorbs for a long time virtually all of the country's industrial growth and develops a modern agriculture to boot. So wide, protracted, and dangerous a cleavage cannot arise as easily in a small country, as, under most circumstances, economic growth there either has to spill over to the poorer regions or will come to a halt.

3. This important point was suggested to me by Katherine Auspitz.

of Europe with its feudal shackles and class conflicts — may have set the stage for the prolonged acceptance by American society of huge economic disparities.

The more or less unitary character of a country is probably the most important single criterion for appraising the likely strength and duration of the tunnel effect. But other distinctions are of interest. It can be argued, for example, that the strength of family bonds has a direct bearing on these matters. In many cases, the advances of others will generate hope not so much for oneself as for one's children. The prediction that my children will have a better life than I did should improve my own welfare in any event, but it will do so with particular force if I expect my grown-up children to be living with me, to share in the expenses of the household, and eventually to support me in my old age. From this point of view, then, traditional family arrangements facilitate the operation of the tunnel effect and turn out to have some development-promoting potential.[4]

Provided it is not highly segmented, "traditional" society is generally in a better position than its modern counterpart to take advantage of the tunnel effect. Members of traditional societies are typically tied to each other by a dense network of obligations that are both mutual and flexible: it is none too clear what it is that is owed nor when it falls due. Hence, when some members of such a society advance, their obligations are apt to expand, and many of those who remain behind expect to be benefited in due course and in some measure as a result of their pre-existing, if imprecise, claims on the former. La Rochefoucauld noted this effect in a maxim that in general is as fine a formulation of the tunnel effect as I have come across: "The immediate feeling of joy we experience when our friends meet with luck . . . is an effect . . . of our hope to be lucky in turn or to gain some advantage from their good fortune." [5]

4. For other arguments along this line, see my *A Bias for Hope: Essays on Development and Latin America* (New Haven: Yale University Press, 1971), Ch. 14. The proposition about family arrangements that is put forward in the text is a special case of a more general proposition: the tunnel effect will be the stronger, the weaker is the time preference for present over future income, i.e., the lower is the discount rate. The Mathematical Appendix shows that the discount rate enters explicitly into the expression relating changes in B's income to A's utility. This is intuitively obvious: even a very strong positive effect of B's income increase on A's expected income will make little difference to A's present utility if A attaches a steep discount rate to his expected income.

5. *Maximes*, 582. The phenomenon in reverse was pointed out at about the same time by Thomas Hobbes: "Griefe, for the Calamity of another, is PITTY; and ariseth from the imagination that the like calamity may befall

Next, a distinction may be made between various "theories of success" that typically prevail in different societies or cultures. If individual advances are attributed primarily to chance, the success of others will occasion the tunnel effect; for the next time fortune strikes, I may well be the lucky one. Hence, the belief that the world is governed by chance, ordinarily considered so harmful to sustained development, has something to recommend itself to the extent that the tunnel effect is considered a valuable, if somewhat volatile, resource for an economy attempting to achieve growth. If, on the other hand, success of others is likely to be attributed from the outset to nepotism, favoritism, or similar unfair practices, then there will hardly be any initial feeling of anticipatory gratification among those who are not participating in the division of the spoils.

It is also conceivable, though perhaps not very likely, that success of others is attributed to their superior merit and qualities such as hard work. Those who are left out would then blame only themselves for their lack of advance. They could, as a result, either simply defer to the more successful members of their community, or they might envy them for being more richly endowed, or they could try to emulate them by redoubling their own effort. In this case, therefore, the result would be rather indeterminate, and one needs more information.[6]

himselfe; . . . therefore for Calamity arriving from great wickedness, the best men have the least Pitty; and for the same Calamity, those have least Pitty, that think themselves least obnoxious [= exposed] to the same." *Leviathan*, Part I, Ch. 6. La Rochefoucauld and Hobbes both came upon these insights in the course of their search for a rigorous, if unpleasant, science of human nature. Unpleasantness of findings almost became a test of rigor and truth for them. Naturally enough, it did not occur to them that, in the situations at hand, self-centeredness has the virtue of overcoming envy and *Schadenfreude*, respectively.

6. Attribution theory, a relatively new branch of social psychology, has attempted to throw light on this area of human behavior. Experiments have been devised to study the extent to which onlookers pin the blame for accidents on those who have been involved rather than on ill fate. Apparently the onlooker typically resorts to what has been called "defensive attribution": he looks for some good reason why the accident is one of the involved parties' own peculiar fault so as to gain the assurance that the mishap could not possibly happen to himself. (Only if no such good reason can be found, if in other words the person who might be blamed is and behaves very much like the onlooker, then and only then will the latter tend to exonerate the former and blame fate instead.) On the other hand, if another person, rather than being involved in an accident, experiences a lucky break, the onlooker will tend to credit chance rather than merit, thereby gaining some hope that a similar lucky break is in store for him. Besides being unflattering to human nature, these findings introduce an asymmetry into the operation of the tunnel effect: it will be stronger in the forward than in the backward direction; that is, the expectation to share eventually in the advances of others will be more pronounced than the expectation to follow them in their setbacks. For an experimental confirmation of this asymmetry and for references to other research in this area, see Jerry I. Shaw and Paul Skolnick, "Attribution of

A further possibility is that the success of others is attributed not to their qualities, but to their *defects*. One often rationalizes his own failure to do as well as others in the following terms: "I would not want to get ahead by stooping to his (ruthless, unprincipled, servile, etc.) conduct." This sort of attribution of success is not too dissimilar, in its consequences for the tunnel effect, from the one that concentrates on the merits of those who have risen. It makes it possible, of course, for those who are not advancing to rest content with their own station in life. But it could also happen that the next time around they will change their conduct and be a bit more ruthless, unprincipled, servile, etc., than hitherto. To the extent that it is easier to be servile and unprincipled than gifted and hardworking, attribution of success of others to their faults rather than to their qualities may actually facilitate the operation of the tunnel effect.

A distinction related to these theories of success is based on the various organizational ways in which individual advances are perceived to come about. Such perceptions depend fundamentally on the decision-making system. If decision making is perceived to be largely decentralized, individual advances are likely to be attributed to chance, or possibly to merit (or demerit). When decision making is known to be centralized, such advances will be attributed to unfair favoritism or, again, to merit. To the extent that merit is not a likely attribution, decentralized decision making, which permits success of others to be explained by chance, is therefore more conducive to giving full play to the tunnel effect. It is indeed characteristic of market economies. Centralized-decision-making economic systems have come typically into the world because of excessive inequalities existing in, or arising under, decentralized systems. It is interesting to note that they will strain to be more egalitarian not just because they want to, but also because they have to: centralization of decision making largely deprives them of the tolerance for inequality that is available to more decentralized systems.

Similar considerations apply as a *given* economic system evolves in the direction of greater centralization or decentralization. For example, the tolerance for inequality can be expected to decline when a capitalist economy becomes more oligopolized and bureaucratized. An upsurge in populist sentiment has usually been attributed to the greater concentration of wealth that has sometimes

Responsibility for a Happy Accident," *Journal of Personality and Social Psychology*, XVIII (1971), 380–83.

been characteristic of such a period. But the tolerance for inequality may decline even without such concentration, simply because those who are excluded from advances no longer perceive such exclusion as temporary bad luck, but as an inevitable or even calculated effect of the "system."

VI. An Alternative Reaction: Apprehension over Advances of Others

It is a basic idea of this essay that changes in the income of B lead to changes in A's welfare not only because A's relative position in the income scale has changed, but because changes in B's fortunes will affect A's prediction of his own future income. The principal case that has been considered so far is the tunnel effect: B advances, and this leads A to predict an improvement in his own position as well. Mention has also been made of the diametrically opposite situation: a deterioration in B's situation leads A to be apprehensive about his own, as is the case in a spreading depression. Is a mixed case conceivable? In other words, could A come to feel under certain circumstances that an advance on the part of B is likely to affect his own welfare *negatively*?[7] Actually this sort of prediction is not too farfetched: it is likely to be made in a society whose members are convinced that they are involved in a zero-sum game because resources are available in strictly limited amounts. This representation of social reality has been called the Image of Limited Good by George Foster, who claims it to be typical of many peasant societies around the world.[8] Assume the Image prevails in a community and that, at one point, a number of its citizens (group B) improve their position, while the income of the rest of the people (group A) remains unchanged. One conclusion to be drawn from such a development would of course be for both A and B to give up the Image. But suppose the community is strongly committed to it as a result of past experiences: one way of maintaining the Image is then to dismiss what has happened as purely transitory. And if the advance of group B appears to be irreversible, then the Image can be held on to only by the prediction that A's fortunes will soon suffer decline.[9]

7. This question arose as a result of Michael Rothschild's mathematical formulation of the tunnel effect. See Appendix.

8. *Tzintzuntzan*, Ch. 6.

9. One reason for this prediction could be A's feeling that B, as a result of his increased wealth, will also acquire more power, a good that is generally acquired at the expense of others, and that this redistribution of power, besides

It is in fact possible that we have here come upon a better way of accounting for what has been described by Foster and others as the "prevalence of envy" in peasant societies.[1] It may well be that when *B* advances, this makes *A* unhappy not because he is envious, but because he is worried; on the basis of his existing world view, he must expect to be worse off in short order. In other words, *A* is unhappy not because of the presence of relative deprivation, but because of the anticipation of absolute deprivation.

The reinterpretation of institutionalized envy, which is suggested here, can actually be seen to be closely related to the tunnel effect. In a society without the experience of sustained growth, an initially emerging situation in which one group of people is improving its economic position while another group remains stationary is probably felt as essentially unstable: either available resources have not increased, and in that case group *A* will necessarily suffer a decline to compensate for *B*'s rise; or some windfall gain has expanded total resources, and in this case group *A* will soon get its proper share of the windfall. Therefore, one or the other of these two outcomes is likely to be anticipated rather than the continuation of the current situation. Which one will be picked as most likely will of course make a great deal of difference to the course of social conflict in that society. The decision could often be narrowly balanced, as on a knife's edge, depending as it does on *A*'s perception of the causes of *B*'s initial advance. This perception will depend on the factors briefly reviewed in the preceding section. But it now appears that the alternative for those who are left behind is not merely between an expectation of sharing in the advances of others and the status quo, but between expectation of advance and anticipation of decline. This situation and the knife-edge character of the decision between these alternative expectations perhaps explain why the forecasting of social conflict is such hazardous business.

VII. Concluding Remarks

The preceding argument suggests a few summary points and concluding remarks.

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being in itself objectionable to *A*, will have in time an adverse effect on his economic position. Such a feeling is likely to arise particularly if *B* comes to be *substantially* better off than *A*. Oskar Morgenstern has pointed to this situation as one limitation to the doctrine of Pareto optimality. See his "Pareto Optimum and Economic Organization," in Norbert Kloten *et al.*, eds., *Systeme und Methoden in den Wirtschafts- und Sozialwissenschaften* (Tubingen: J. C. B. Mohr, 1964), p. 578.

1. *Tzintzuntzan*, pp. 153–55.

1. If growth and equity in income distribution are considered the two principal economic tasks facing a country, then these two tasks can be solved sequentially if the country is well supplied with the tunnel effect. If, because of existing social, political, or psychological structures, the tunnel effect is weak or nonexistent, then the two tasks will have to be solved simultaneously, a difficult enterprise and one that probably requires institutions wholly different from those appropriate to the sequential case.[2] To make matters worse, it may be impossible to tell in advance whether a given country is or is not adequately supplied with the tunnel effect: as was argued in the last section, it is conceivable that only development itself will tell.

2. On the basis of the distinction just made, it is possible to speak of two kinds of "development disasters." The first is characteristic of societies that have attempted to develop by means of a strategy implying the arising of new inequalities or the widening of old ones; but, in view of their structure, these societies should never have done so. Nigeria and Pakistan are probably cases in point. The other kind of development disaster occurs in countries in which the above strategy is nicely abetted for a while by the tunnel effect, but where ruling groups and policy makers fail to realize that the safety valve, which the effect implies, will cease to operate after some time. This situation has been increasingly typical of a number of Latin American countries: Brazil and Mexico have already experienced disasters, and there are numerous portents of more to come.

3. In contrast with most conventional representations, the development process is here viewed as being exposed to crisis, and perhaps disaster, even after lengthy periods of forward movement. The view here proposed necessarily allocates a decisive role to politics. Its implications for the political evolution of countries where the tunnel effect operates are obvious. As long as the effect is strong, the developing country will be relatively easy to govern. It may even exhibit a surprising aptitude for democratic forms, which, alas,

2. Political scientists have described the difficulties facing the new states of the twentieth century in these terms. Whereas, so they point out, the countries of Western Europe had centuries to solve, one after the other, the various problems of modernization and nation building — territorial identity, authority, mass participation, etc. — the new nations are faced with all of them at once. See Samuel P. Huntington, *Political Order in Changing Societies* (New Haven: Yale University Press, 1968), Ch. 2; Stein Rokkan, "Dimensions of State Formation and Nation Building," in Charles Tilly, ed., *The Building of States in Western Europe* (Princeton, N.J.: Princeton University Press, forthcoming). Various alternative sequential paths are explored in Dankwart A. Rustow, *A World of Nations* (Washington: Brookings, 1967), Ch. 4.

is likely to be ephemeral; for, after a while the tunnel effect will decay and social injustice will no longer go unperceived and unresisted. As a first reaction, the coercive powers of the state will then be used to restrict participation and to quell protest and subversion. More constructive programs of responding to crisis are easy to conceive, but seem to be extraordinarily difficult to bring into the world.

Mathematical Appendix

Consider a society composed of two types of people, labeled A and B. We assume that utilities are interdependent in two distinct ways. The utility of people of type A, besides being determined by their own present income, $Y^A(t)$, is affected by the present income of people of type B, $Y^B(t)$, and by their expected future income, $E^A(t)$ which depends on B's present income, among other things.[3] Hence we write

$$(1) \qquad U^A(t) = V(Y^A(t), Y^B(t), E^A(t)).$$

It is natural to assume that A's utility increases with his present and future income or that [4]

$$(2) \qquad V_1 > 0; \quad V_3 > 0.$$

The effect of B's income on A's utility is more complex. A evaluates it in two ways — first, according to whether B's success (or failure) *considered by itself* pleases or displeases him and, second, depending on what he thinks B's fate portends for him. Thus,

$$(3) \qquad \frac{\partial U^A(t)}{\partial Y^B(t)} = V_2 + V_3 \frac{\partial E^A(t)}{\partial Y^B(t)}.$$

In this expression V_2 is the pure effect of compassion or envy and $V_3 \partial E^A(t)/\partial Y^B(t)$ reflects A's concern for B's income as an indication of his own future prospects.

The text of this paper focused on the second term of (3). The first part of this term is essentially the rate at which A discounts future income.[5] The second part of the term, $\partial E^A(t)/\partial Y^B(t)$, has not been well studied. It is determined by the method that A uses

3. Symmetry and completeness would demand that $E^B(t)$, predicted future income of people of type B, be an argument of A's utility function. Rigor would require recognizing that the expectations of future income, which will occur over several periods, cannot always be faithfully represented by a single number. These (and other) fine points will be ignored here.

4. Subscripts denote partial differentiation.

5. From this observation it follows immediately that the greater the discount rate, the greater the tunnel effect, as observed on p. 556, note 4 of the text.

to form expectations of his future income. Neither formal economic theory nor the weight of historical and econometric evidence indicates that there is any one preferred way to model the complex processes that people use to form expectations. We are thus free to speculate on the implications of different plausible specifications. Not only is the form of the expectations function not clearly prescribed, but also the signs of its first partial derivatives can conceivably be either positive or negative. If the tunnel effect is present, $\partial E^A(t)/\partial Y^B$ will be positive. But A could also feel that an increase in B's income does not augur well for him. In that case $\partial E^A(t)/\partial Y^B(t) < 0$, and possibly $\partial U^A(t)/\partial Y^B(t) < 0$, even though A is a perfectly decent benevolent fellow ($V_2 > 0$). Conversely, if A is subject to the tunnel effect but is mean spirited, then his hopes of future good fortune may swamp his envy. That is, it is quite conceivable that $\partial U^A(t)/\partial Y^B(t)$ should be positive even though V_2 is negative.

The rest of this appendix consists of explicit models of possibilities mentioned in the text. First, we give an example of a society in which everyone is made "better off" by an unequal distribution of income. Then we show how an initial tolerance for income inequality may be reversed if the benefits of economic growth are not distributed equally.

1. Preferences for Inequality

Suppose that the utility function in (1) is linear,

$$V(Y^A(t), Y^B(t), E^A(t)) = a_1 Y^A(t) + a_2 Y^B(t) + a_3 E^B(t), \tag{4}$$

and that A forms expectations by averaging his income with B's,[6] so that

$$E^A(t) = \lambda Y^A(t) + (1-\lambda) Y^B(t). \tag{5}$$

Society is composed of individuals of type A and type B in the ratio of N to 1. A sum of money is to be distributed among the populace. For political or administrative reasons, all people of each type must be treated exactly alike. Let us compare the utility accruing to persons of type A from a dollar spent on each of them,

$$\frac{\partial V}{\partial Y^A(t)} = a_1 + a_3\lambda, \tag{6}$$

to that from the same N dollars spent on B,

6. Those who object to these simple forms are invited to think of them as approximations to whatever functional forms they find more plausible. Since the analysis is explicitly marginal, this is appropriate. To the objection that the weights accorded $Y^A(t)$ and $Y^B(t)$ need not sum to one, it should be noted that any deviation from unity is absorbed in the parameter a_3.

$$(7) \qquad N\frac{\partial V}{\partial Y^B(t)}=N(a_2+a_3(1-\lambda)).$$

If we presume that $a_2=0$, or that people of type A are indifferent to the well-being of B, then (7) becomes

$$N\frac{\partial Y}{\partial Y^B(t)}=Na_3(1-\lambda),$$

which will exceed (6) whenever

$$(8) \qquad N>\frac{a_1+a_3\lambda}{a_3(1-\lambda)}.$$

So far we have not mentioned B's preferences. There is no reason to suppose that A's preferring that B get additional income should imply that B will not also be made better off by distributions of income to himself than by distributions to A.[7] Suppose B's utility and expectations function are of the same linear form as A's. Thus, if b_1 and b_3 are the weights B assigns to the utility of present and expected future income (b_2, the weight given to A's income, is presumed equal to zero for simplicity and symmetry) and μ and $1-\mu$ are the weights accorded B's and A's present income and in B's prediction of his own future income, then B will be made better off if he, rather than A, is given additional income whenever

$$(9) \qquad \frac{1}{N}<\frac{b_1+b_3\mu}{b_3(1-\mu)}.$$

If both (8) and (9) hold, everybody will be happier if the benefits of growth are distributed noticeably and unevenly rather than equitably and imperceptibly. It is clear from (8) and (9) that this seemingly odd state of affairs is likely to obtain when N is large, λ small, and μ large. That is, the rich must be a relatively small segment of the population who themselves do not predicate their own good fortune on that of the masses (large N and μ). More crucially, the bulk of the population must find it sufficiently plausible that their fellow citizens' good fortune will spread to them (small λ).

It is interesting to speculate when λ is likely to be small. A plausible hypothesis is that people will be confident that their neighbors' good fortune will spread to them when (i) their neighbors are not obviously different from them and (ii) the inequality has not persisted for long. This is, in part, the basis of the assertion in the text that the tunnel effect is more available to unitary than

7. We do not consider the possibility that either A or B prefers an equal distribution to one in which A or B gets everything. Linearity precludes equality ever being preferred to inequality.

segmented societies and that relying on it for too long may lead to rising discontent, if not disaster. An example of such a reversal is given in the next section in which a more explicitly dynamic model is analyzed.

2. *The Reversal from Tolerance for Inequality to Intolerance*

In this section we discuss an example of the sort of process that could lead to a development disaster. As development takes place, all its benefits are distributed to B whose income grows steadily while that of A remains constant. Initially A's utility rises as he expects to share in B's bounty. As time goes on and his situation remains stationary, he becomes discouraged. Eventually his utility falls. A's utility function is log-linear so that

$$V(Y^A(t),\ Y^B(t),\ E^A(t)) = \alpha \log Y^A(t) + \beta \log Y^B(t) + \gamma \log E^A(t), \tag{10}$$

while predicted future income is a geometric average of $Y^A(t)$ and $Y^B(t)$,

$$E^A(t) = [Y^A(t)]^{(1-\eta(t))}[Y^B(t)]^{(\eta(t))}$$

or [8]

$$\log E^A(t) = (1-\eta(t)) \log Y^A(t) + \eta(t) \log Y^B(t). \tag{11}$$

A's utility as a function of $Y^A(t)$, $Y^B(t)$, and t may then be written

$$W^A(Y^A(t),\ Y^B(t),t) = (\alpha+\gamma(1-\eta(t))) \log Y^A(t) + (\beta+\gamma\eta(t)) \log Y^B(t). \tag{12}$$

We may plot the time profile of A's utility if we know the course of his income, of B's income, and of $\eta(t)$. Suppose that initially the income of A and B is equal,

$$Y^A(O) = Y^B(O) = Y, \tag{13}$$

and that B's income begins to grow at a constant rate g, while A's remains static,

$$Y^A(t) = Y;\ Y^B(t) = Ye^{gt}. \tag{14}$$

Suppose further that A initially hopes to share in B's good fortune but grows more discouraged as time goes on. Symbolically this is $\eta'(t) < 0$. A plausible specification is that

$$\eta(t) = \eta e^{-ht}. \tag{15}$$

Substituting (13), (14), and (15) into (12), we find that A's well-being at time t is given by

8. Again we have chosen γ so that the weights on $\log Y^A(t)$ and $\log Y^B(t)$ sum to unity. Since we are about to examine how $\eta(t)$, but not γ, changes over time, more is implied than a harmless normalization.

$$(16) \qquad \begin{aligned} W^A(t) &= (\alpha+\gamma(1-\eta e^{-ht}))\ \log\ Y \\ &\quad +(\beta+\gamma\eta e^{-ht})\ (\log\ Y+gt) \\ &= (\alpha+\beta+\gamma)\ \log\ Y+(\beta+\gamma\eta e^{-ht})\ gt. \end{aligned}$$

Differentiating (16), we have

$$(17) \qquad W^{A\prime}(t) = g(\beta+\gamma\eta e^{-ht}) - gt(h\gamma\eta e^{-ht}).$$

It follows that

$$W^{A\prime}(0) = g(\beta+\gamma\eta),$$

which will be positive whenever

$$(18) \qquad \beta+\gamma\eta > 0.$$

Thus, if there is not too much envy ($-\beta$ is not too large), A's utility will rise even though his own income remains static. It is easy to see that if A is malevolent or indifferent to B's fate ($\beta \leq 0$), then this state of affairs cannot persist. This conclusion follows from the calculation of the limiting value of A's utility. If $\beta = 0$, then A eventually returns to a situation in which he was just as well off as he was initially,

$$(\lim_{t\to\infty} W^A(t) = W^A(0));$$

if A is envious, then he eventually becomes infinitely miserable,

$$(\lim_{t\to\infty} W^A(t) = -\infty).$$

If A is made better off by B's good fortune, then his asymptotic utility is infinite (as he accords a positive weight to B's infinite utility). However, even in this case it is possible that his fortunes will suffer a temporary reversal. If β is not too large and $\gamma\eta$ not too small, then the equation $W^{A\prime}(t) = 0$ has a solution, say τ. When that τ is reached, A's utility will begin to decline. Society's tolerance for inequality will reverse.

We hope these examples illustrate how easy it is to incorporate the tunnel effect into formal models. Many other variants are possible. It is not difficult to write down and analyze models in which the strength of the tunnel effect depends on the absolute size of B's income or on the gap (absolute or relative) between the incomes of the two classes. Similarly, models with more than two classes of individuals are simple to construct. We are aware that the construction of formal models of the content of a theory is not equivalent to the detailing of testable empirical implications of that theory. However, it does seem a useful first step.

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