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SOME ASPECTS OF WELFARE ECONOMICS

By A. C. Pigou*

I have been invited by the editor of the *American Economic Review* to write an article on "Some Aspects of Welfare Economics"; and I have accepted. Whether I ought to have accepted is more than doubtful. For a great deal has been written on this subject in recent years and most of it I have not read. Nevertheless, having agreed to write the article, I must do what I can. My book *The Economics of Welfare,* not revised since 1932, stood aside from some significant logical problems which arise out of the fact that real income is made up of a number of different things, the quantities of which vary in different proportions. It is with these problems, together with some semi-philosophical questions about utility, that "the new Welfare Economics," as it likes to be named, principally deals. The technique of indifference curves, preference maps and so on, which it employs, is, of course, machinery. Here I shall confine myself to fundamental issues.

I. *The Purpose of Welfare Economics*

Welfare Economics is concerned to investigate the dominant influences through which the economic welfare of the world, or of a particular country, is likely to be increased. The hope of those who pursue it is to suggest lines of action—or non-action—on the part of the State or of private persons that might foster such influences. Nobody supposes that economic welfare is coincident with the whole of welfare or that the State ought to pursue it relentlessly without regard for other goods—liberty, for instance, the amenities of the family, spiritual needs and so on. But here we are not concerned with these things; only with economic welfare, that is to say, the part of welfare that is associated with the economic aspects of life. First and foremost

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we have to satisfy ourselves as to what that is and, more particularly, to decide whether or not it is the sort of thing to which the notions of greater or less and increase or decrease can properly be applied. For, if they cannot, Welfare Economics, every part and aspect of it, vanishes and leaves not a wrack behind.

II. *The Meaning of Economic Welfare*

Let us consider first a single individual. What do we mean by the economic welfare of such an individual? It will be generally agreed that this must be somehow resident in his state of mind or consciousness. When we speak loosely of "material welfare," in the sense of a man's income or possessions, that is not welfare as we are thinking of it here. Material welfare may be a *means* to welfare, but it certainly is not identical with or a part of it. As it seems to me, welfare must be taken to refer either to the goodness of a man's state of mind or to the satisfactions embodied in it. If we were prepared to say that the goodness of satisfactions depended simply on their intensity it might not be necessary to make this distinction. But it is generally felt, in a vague way, that some sorts of satisfaction are in their nature better than others, and that quite irrespective of whether or not they entail dissatisfactions later on. If this is right, a situation containing more satisfaction is not necessarily "better" than one containing less. For the present purpose, I propose to make welfare refer to satisfactions, not goodness, thus leaving it possible that in certain circumstances, a government "ought"—granted that it "ought" to promote goodness—to foster a situation embodying less welfare (but more goodness) in preference to one embodying more welfare.

A man's welfare then consists in his satisfactions. But what does satisfaction mean? Not simply happiness or pleasure; for a man's desires may be directed to other things than these and may be satisfied. It might seem that, when his desire attitude is given, his satisfaction depends straightforwardly on the extent to which his desires are fulfilled. But the satisfaction yielded when a desire is satisfied does not always bear the same proportion to the intensity of the desire. Not only may people make mistakes, desiring certain objects in the hope of satisfactions which they do not in fact yield, but also, as Sidgwick observed, "I do not judge pleasures to be greater or less exactly in proportion as they exercise more or less influence in stimulating the will to actions likely to sustain or produce them."[1] Some economists, neglecting this point, have employed the term "utility" indifferently for satisfactions and for desiredness. I shall employ it here to mean satisfactions, so that we may say that a man's economic welfare is

[1] *Methods of Ethics* (Macmillan & Co., England, 1893), p. 126.

made up of his utilities. For a full treatment we should need to bring into account also such dissatisfactions or disutilities as men may suffer from work, or, what is not quite the same thing, such further satisfactions or utilities as leisure yields to them. It would not be difficult to do this but doing it would complicate and lengthen the discussion. I shall not, therefore, trespass into that field.

III. *Measurability and Comparability in Principle of Satisfactions Enjoyed by the Same Individual*

I said in Section I that, if economic welfare were not something to which the notion of greater or less were applicable, Welfare Economics would vanish away. It is sometimes thought that this notion *cannot* be applicable unless satisfactions are measurable.

Now for magnitudes of any kind to be measurable means that a unique and reciprocal correspondence, a one-one relation, can be established between the magnitudes in question and cardinal numbers. Extensive magnitudes, such as length, are in general measurable in this sense. Pleasures, satisfactions, utilities, are intensive magnitudes and are not measurable. They are not the sort of thing that we can correlate with a series of cardinal numbers.

It is true, no doubt, that an intensive magnitude may sometimes be correlated with an extensive magnitude and so may be capable of being measured indirectly. This would be true of satisfactions if, by a miracle, they were correlated rigidly with levels of temperature or speed of pulse. Moreover, there is in fact available in our field an "extensive" magnitude of the kind required, namely the amount of money that a man would be willing to pay in order to avoid losing a given satisfaction, or pleasure. Marshall, it will be remembered, laid stress on the advantage which economics has over other social sciences in possessing this measuring rod. Apart, however, from complications about the relation between the intensity of desires and the intensity of the satisfactions that result when a desired object is secured, to which I have already referred, neither Marshall nor anybody else claims that money enables us to measure anything more than small parts of a man's satisfaction. If I have an income of £1,000, it is reasonable to say that the satisfaction I get (or, more strictly expect) when I spend £2 on a small increment of one commodity is likely to be twice as great as what I get when I spend £1 on a small increment of another. But nobody supposes that the satisfaction I get from the whole of my £1,000 income will be only 1,000 times as large as what I get from the expenditure of a single marginal pound. Money does not, therefore, enable us to correlate satisfactions with a series of cardinal numbers, that is, to measure it in the sense understood here. We must concede that they are not measurable in that sense.

This, however, is far from entailing that satisfactions are not in principle *comparable*. The following passage from Bertrand Russell makes this clear. "Those mathematicians who are accustomed to an exclusive emphasis on numbers will think that not much can be said with definiteness concerning magnitudes incapable of measurement. This, however, is by no means the case. The immediate judgments of equality, upon which (as we saw) all measurements depend, are still possible where measurement fails, as are also the immediate judgments of greater and less. Doubt only arises where the difference is small; and all that measurement does in this respect is to make the margin of doubt smaller—an achievement which is purely psychological and of no philosophical importance. Quantities not susceptible of numerical measurement can thus be arranged in a scale of greater and smaller magnitudes, and this is the only strictly quantitative achievement of even numerical measurement. We can know that one magnitude is greater than another and that a third is intermediate between them; also, since the differences of magnitudes are always magnitudes, there is always (theoretically at least) an answer to the question whether the difference of one pair of magnitudes is greater than, less than or the same as, the difference of another pair of the same kind. . . . Without numerical measurement, therefore, the quantitative relations of magnitudes have all the definiteness of which they are capable—nothing is added, from the theoretical standpoint, by the assignment of correlated numbers."[2]

A corollary follows—or seems to follow. Given that we are able in principle to say that the difference between one pair of magnitudes is greater or less than the difference between another pair, we must presumably also be able to say that about differences between differences. This entails that, in spite of the fact that utilities are not measurable, it is still legitimate in principle to imagine a marginal utilities curve and to say, not merely that it slopes down or up, but also that it slopes more or less steeply as we move along it from right to left.

It is indeed impossible even in principle to draw a base line for the curve. Non-measurability entails that. It is thus meaningless to say that the utility derived by one individual in a given period from x units of a commodity is twice, or any other multiple, of the utility derived from y units, or to say, for example, that the curve is a rectangular hyperbola or bears some specifiable relation to a rectangular hyperbola. This entails that we cannot compare the damage done to welfare by a given proportionate change in a man's income when he is enjoying incomes of different sizes. Such questions as whether a tax proportioned to income will inflict equal sacrifice upon him whatever the size of his

[2] Russell, *Principles of Mathematics* (Cambridge University Press, England, 1903), pp. 182-83.

income or whether a tax progressive in some given form and degree is required to do this, are unanswerable, not merely from lack of data, but in principle. Thus the non-measurability of utility rules out one type of question, which, were utility measurable, it would be legitimate to ask—and which, assuming that it *is* measurable, I did ask in Chapter 7, Part II of my *Study in Public Finance*. This does not, however, reduce the domain of Welfare Economics very seriously, nor does it seriously matter that such questions as whether aggregate welfare would be increased if the population were larger but individual satisfactions smaller are in principle, not merely in practice, unanswerable.

IV. *Comparability in Fact*

So far I have been discussing comparability in principle; are satisfactions or utilities the sort of things which can be held in the relation of greater or less or is it nonsense to maintain this of them in the way that it is nonsense to maintain that one is more red or more liquid than another? I have answered that question. But, granted that these things are comparable in principle, it is a quite different question whether they can be actually compared. If we found that they could not be actually compared, it would not follow that they are incomparable in principle. If all thermometers and kindred gadgets were destroyed, this would not upset at all the comparability in principle of temperatures. *Per contra,* to find, as we have done, that utilities, differences among utilities and differences among these differences are comparable in principle does not imply that all or any of them can be compared in fact. Subject, however, to a qualification to be mentioned presently, it is generally agreed that, when an individual chooses satisfaction A in preference to satisfaction B, this *indicates* that satisfaction A is or, more strictly, is expected to be greater than satisfaction B. Choice thus provides an objective test of the comparative magnitudes of different utilities or satisfactions to a given individual. It does the same for marginal utilities or satisfactions, that is the utilities derived from marginal increments of different sorts of goods. But nobody chooses or can choose between the *excess* of marginal utility A over marginal utility B and the *excess* of marginal utility C over marginal utility D. Hence these second differences, though, as I have maintained, comparable in principle, are not comparable in fact—at all events by means of this kind of test. The point, however, is not important for our main argument.

V. *Inter-personal Comparisons*

So far we have been considering only the comparability of satisfactions as affecting the same person. Once we reject solipsism and admit the existence of other people, what has already been said should suffice to show that the utilities enjoyed by different people are not in their

nature incomparable—it is not nonsense to say that A is happier than B. But the question whether they are comparable in fact is a more difficult one. The test of choice is not available here as it is for intra-personal comparisons. No doubt, a parent can choose satisfaction A for one of his sons as against satisfaction B for another; and, if he is impartial between them, this should mean that he judges satisfaction A to be the greater. But I do not think we can appeal to this because the parent's choice is not a direct one and, in framing his decision, he is really faced with the very problem that confronts us here. We cannot, therefore, shift our burden upon him. The issue for Welfare Economics is important. For, if the satisfactions of different individuals cannot be compared, a large part of that subject is undermined. We are not, indeed, precluded from saying that, if one person has more of something and nobody else has less of anything, the welfare of the whole group, so long as their desires are unchanged, is increased. But we are precluded from saying anything about the implication of transfers between richer and poorer persons. To ask whether inter-personal comparisons of satisfactions or utilities are in fact possible is thus not an idle question.

Now, if we take random groups of people of the same race and brought up in the same country, we find that in many features that *are* comparable by objective tests they are on the average pretty much alike; and, indeed, for fundamental characters we need not limit ourselves to people of the same race and country. On this basis we are entitled, I submit, to infer by analogy that they are probably pretty much alike in other respects also. In all practical affairs we act on that supposition. We cannot prove that it is true. But we do not need to do so. Nobody can prove that anybody besides himself exists, but, nevertheless, everybody is quite sure of it. We do not, in short, and there is no reason why we should, start from a *tabula rasa,* binding ourselves to hold every opinion which the natural man entertains to be guilty until it is proved innocent. The burden is the other way. To deny this is to wreck, not merely Welfare Economics, but the whole apparatus of practical thought. On the basis of analogy, observation and intercourse, interpersonal comparisons *can,* as I think, properly be made; and, moreover, unless we have a special reason to believe the contrary, a given amount of stuff may be presumed to yield a similar amount of satisfaction, not indeed as between *any* one man and any other, but as between representative members of groups of individuals, such as the citizens of Birmingham and the citizens of Leeds. This is all that we need to allow this branch of Welfare Economics to function. Of course, in working it out, positive conclusions can only be reached subject to

very important qualifications—of which something will have to be said presently.

VI. *Programme*

With this background I shall now review the implications and limitations of two propositions in Welfare Economics, on the assumption that satisfactions or utilities, though not measurable, are comparable in principle and can in fact be compared both intra-personally and inter-personally. The two propositions, put at their crudest, are: first, any additions to the real income of an individual makes satisfaction larger; secondly, transfers of money income from better-to-do people to worse-to-do people make satisfaction larger.

VII. *The First Proposition in a One-Commodity World*

In the conditions supposed the amount of satisfaction that our individual gets depends partly on the state of his desires and partly on how much of the commodity is available to him. If the state of his desires is fixed, it will be generally agreed that in all ordinary circumstances his utility will be greater the more of the commodity that he has. If the state of his desires changes spontaneously, this changing is an additional factor affecting welfare, and nothing can be said about its consequences until the exact nature of the change is known. We rule out, therefore, spontaneous changes in desire attitudes. Our proposition is obviously subject to the condition that such spontaneous changes are excluded. On this basis, if the state of an individual's desires were independent of the amount that he has, nothing further would need to be said. But the amount that he has may react upon and partly determine the state of his desires. What are the implications of this possibility, and in what conditions is it to be expected that these reactions will make our proposition invalid?

It is commonly supposed that, besides more stuff with a given desire attitude entailing more utility, so also does a keener desire attitude with a given quantity of stuff. If this were always so, when an increase of stuff, in the familiar manner of appetite growing with eating, made desire more intense, the increase of stuff would enhance satisfaction in a double way, partly through itself and partly through its effects. In fact, however, enhanced desire with a given quantity of stuff does not necessarily entail more utility or satisfaction. For unsatisfied desire may be painful. If a man with a given income of food per day becomes hungrier, the utility associated with the food he has increases, but the disutility of the food he has not increases too; and the last state of that man may be worse than the first. The ordinary form of diagrammatic analysis fails to bring out this point, though it could easily be

modified so as to make it do so. The point, however, is not, I think, of large practical importance, and, for a broad view, may be left out of account. In general, then, an enhancement of desire increases the utility derived from a given provision of our commodity and a contraction of desire has the opposite effect.

It follows that an increase in the quantity of stuff available, not only when it leaves a man's desire attitude unaltered, but also, *a fortiori,* when it expands it, must entail an increase of utility. But having more of a thing may cause a man's desire attitude towards it to become *less* keen, not more. Or, to put the same thing the other way round, when he has become accustomed to having less he may find himself more happy with any given quantity than he used to be. It may even happen that the total satisfaction he gets from the smaller is as large as what he used to get from the larger quantity.

Thus—for this illustration we may waive the assumptions of one individual and a one-commodity world—consider two undergraduates precisely alike in temperament and constitution. One is poor and goes on a cheap Continental holiday, stopping the night at youth hostels; the other does an exactly similar tour at much greater expense and stopping at luxury hotels. Each of them is conditioned by habit and experience to his circumstances. Is there any reason to suppose that the rich undergraduate has a better time—achieves more utility—than the poor one? Yet again in prewar days well-to-do people had elaborate meals and had a number of servants to work for them. Now they have much simpler meals and do their own work. After they have become accustomed to the new conditions, are they less happy than before? It is very doubtful whether a moderately well-to-do man is appreciably happier now than he would be if transplanted back to the pre-railway age and attuned to the conditions of that age. This is in no way incompatible with a man preferring *at any given moment* to have more rather than less. Nor is it incompatible with the fact that the process of *becoming* better-off often yields satisfaction. In the process there is a prize, and, so far, progress, even among the fairly well-to-do, is not merely illusion. But there is a great deal of illusion about it. From a long-run standpoint, *after incomes in excess of a certain moderate level have been attained,* further increases in it may well not be significant for economic welfare.

The italicised words in that sentence are, of course, vital. What the "certain moderate level of income," to which they refer, is can only be guessed at. My own guess is that, even in this country and most certainly, for example, in Asia, a large number of people have incomes well below it. It follows that over a very wide area, in spite of reactions of having on desiring, having more does in fact entail more satisfaction.

VIII. *The First Proposition in a Many-Commodity World*

Let us now abandon the assumption that real income consists of a single sort of commodity—or of bundles of different commodities in each of which the proportions of these commodities are the same. When we do this it is still possible to say, in a straightforward physical sense, that one real income is larger than another, provided that it contains more of some item and not less of any item. There is, therefore, still meaning in the assertion that, other things being equal, a man's economic welfare is increased if his real income becomes larger; and the discussion of the preceding section remains appropriate without fundamental change.

It may perhaps be suggested that for most practical issues this is good enough, for, while technical knowledge and skill are always going forward in some fields, it is unlikely that they are actually going backwards in any. This may be thought to imply that the representative man's real income is unlikely to expand in some of its parts and at the same time to contract in others. That, however, is wrong. This is immediately obvious as regards agricultural products; some crops will often have a better harvest this year than last, others a worse one. But, over and above that, it is easy to see that, when technique improves as regards some commodity, the quantity of another commodity where it has not improved may not remain stationary, but may fall off. Even when technique has improved in respect of both of two commodities, the output of one of them may fall off. What happens, as a moment's reflection shows, depends on the general conditions of demand. The case, therefore, of some commodities available to our representative man increasing while others decrease is far from being a freak case of no practical importance. On the contrary, it is very important indeed. The relation between alterations of this kind in real income and in economic welfare cannot be ignored.

When this kind of alteration has taken place it is plainly impossible to say in any physical sense that actual real income has become larger or has become smaller. As physical entities the first and second actual real incomes are incommensurable.[3] Fortunately, however, we need not stop here. As was said just now, if a man with given desire attitudes comes to have more of something and not less of anything else, his satisfaction will be increased. Moreover, we may presume, in a general way and subject to qualifications, that, alike before and after a change in his

[3] In the *Economics of Welfare,* I *defined* an increase in actual real income as an alteration in its content such that, with tastes and distribution constant, more satisfaction would be yielded by it after the alteration than before (p. 54). On that basis our problem was to find an *index* of real income changes that would, or probably would, move up or down as real income so defined moved up or down. The problem here is essentially the same, but approached from a different angle.

real income, he will dispose of his purchasing power among different commodities in a way that gives him more satisfaction than he would get from any other disposition. If then the conditions are such that in the new situation he *could* get more income of the old proportionate pattern, or more of some items and not less of any, we may infer that his economic welfare is greater in the new situation than in the old. That is to say, if in the second situation his *potential* real income of the first situation's pattern is greater than his actual real income in the first, we can infer that his utility or satisfaction will be greater in the second situation. *Per contra,* if in the first situation his potential real income (of the second situation's pattern) is greater than the actual real income in the second, his satisfaction will be greater in the first situation.

There is indeed a difficulty. For may it not happen that, not only is the potential real income of the pattern proper to the first situation larger in the second situation than the actual real income of the first situation, but *also* the potential real income of the pattern proper to the second situation is larger in the first situation than the actual real income of the second situation? If this happens, we are forced to the absurd conclusion that our man's aggregate satisfaction is at once greater in the second situation than in the first, and also greater in the first situation than in the second. The emergence of this contradiction proves that the state of things we are supposing cannot exist. If the potential real income of the pattern of the first situation is larger in the second situation than the actual real income of the first situation, it *must* happen that the potential real income of the pattern proper to the second situation is smaller, not larger, in the first situation than the actual real income of the second situation.

This conclusion seems inevitable in logic, but, none the less, unless we can see *how* it comes about that this must happen, we shall be left with the feeling of intellectual discomfort. Why then must it happen? The explanation is that a man's tastes help to determine what his actual real incomes in the two situations are. The discord we have been contemplating is impossible because, though it would occur *if* his actual real incomes were such and such, in fact his tastes, being, on our assumptions, the same in the two situations, *prevent* his actual real incomes from being such and such.[4]

This analysis, it will be observed, does not in all circumstances enable us in principle to decide whether the economic welfare of an

[4] Professor Samuelson's "Evaluation of Real National Income" in *Oxford Economic Papers*, Vol. 2, No. 1 (Jan., 1950), p. 24, when he corrects a mistake in the *Economics of Welfare*.

individual with a given desire attitude is greater in one situation than in another. For it may happen that in each situation his potential real income of the other situation's pattern is *less* than the actual real income of that situation. When this is so, it is easy to see that no inference about his comparative economic welfare in the two situations can be drawn. If this is not obvious immediately, it can easily be made so with the help of algebraic symbols.

IX. *The First Proposition as Regards Groups of People*

Our first proposition when applied to a group of people is obviously subject to all the limitations which we have found to be necessary as regards a single individual. Are there any further limitations?

Suppose first that our group consists of a number of exactly similar persons enjoying identical real incomes and that in consequence of technical advance all these real incomes are increased by equal amounts of some items unaccompanied by a decrease in any others. If people *only* wanted things so as not to be inferior to other people, this development would clearly leave economic welfare unaltered. And no doubt to some extent people do want things for this sort of distinction motive. If it were not for this, it would be difficult for an academic person like myself to conceive how anybody could possibly have ever wanted such things as top hats or frock coats or crinolines or bustles. But it would be absurd to suggest that people *only* want things as a means to distinction. Though, therefore, the economic welfare of groups is not in fact increased by an expansion in real income as much as we should expect it to be if we ignored this characteristic, there is no ground for suggesting that it is not increased at all. So far what is true of individuals is also true of groups.

But in real life changes in technique do not affect all members of a group—a national group for instance—similarly. This opens up new possibilities. Even in a one-commodity world it might happen that a development which increased potential real income as a whole injured particular sections of the group—landlords, for example, or capitalists or wage-earners. If all the persons affected were similar and were initially in receipt of identical incomes, a contraction in the incomes of some might outweigh from the standpoint of welfare a more than equivalent expansion in the incomes of others. With people of different tastes and different initial incomes the same thing is true, and the likelihood of a decrease in aggregate welfare is greater. The change in productivity, since we are supposing it to entail an increase in aggregate income, *could,* of course, be accompanied by a set of transfers—compensations—so arranged that in the final result some persons had more

real income and none had less. In that event aggregate economic welfare *would be* increased. But to say that in that event it *is* increased is, to my mind, to use words in a misleading way. The correct statement is, I think, that the improvement in productivity necessarily entails a *potential* increase in aggregate economic welfare, but does not necessarily entail an actual increase.

In a many-commodity world we saw in Section VII that it is often impossible in principle to say whether or not actual real income has increased between two years, but usually possible to say whether potential real income has. With a single person, we have found that an increase in potential real income over the actual income of an earlier time necessarily entails an increase in economic welfare, provided that the person's desire attitudes are the same before and after the change. With a group within which distribution is different after the change from what it was before, we can only say that an increase in potential real income necessarily entails a potential increase, not an *actual* increase, in economic welfare. If productivity changes make things predominantly consumed by poor persons (or by persons specially keen on those things) more abundant and things predominantly consumed by rich persons (or by persons indifferent to those things) less abundant, aggregate economic welfare may be increased even though aggregate potential real income is diminished; just as in opposite conditions it may be diminished even though aggregate potential real income is increased.

All this is true and from an academic point of view significant. But the paradox that technical advance may for this sort of reason be adverse to welfare is not I think—apart from advance in the machinery of war—significant practically. For our paradox can only become a fact if technical advances that increase potential real income as a whole at the same time damage the relatively poor. But experience hitherto does not suggest that technical advance in fact acts in that way. On the contrary, mechanical improvements are more readily made in respect of mass-produced goods, which poor people predominantly buy, and in transport, which directly or indirectly cheapen poor men's goods in a larger proportion than rich men's goods. As Leroy-Beaulieu observed long ago: "The man of fashion who is fitted for his clothes by a tailor gains nothing from the great reduction of prices which shops selling clothes ready-made offer to the less comfortable section of the population."[5] Moreover, as the history of the motor car, culminating in the petrol driven lorry and motor omnibus, illustrates even those improvements which were originally designed exclusively for

[5] *La Répartition des Richesses,* p. 87.

the luxuries of the rich are apt soon to spread themselves to the comforts of other classes.[6] Nobody, of course, can be certain that the experience of the past will not refute itself in the future. But subject to that general caution we may, I think, feel confident that what was said in the last section about the relation of changes in potential real income to the economic welfare of a single individual is true also without serious limitations of national or other groups.[7]

X. *The Second Proposition*

Let us now pass, once more beginning with the assumption of a one-commodity world, to the second of the two propositions set out in Section VI, namely, that transfers of money income from relatively rich to relatively poor persons increase aggregate satisfaction. In a one-commodity world transfers of money income imply unambiguously transfers of real income. It will not, I think, be disputed that, provided people's desire attitudes are not affected by differences in the size of their incomes, the law of diminishing utility in respect of real income will prevail. It follows immediately that, as between any two people with similar desire attitudes, a transfer of real and so of money income from the better-to-do to the worse-to-do—apart from reactions on real income, of which something will be said presently—increases aggregate satisfaction. Nor does it matter that the rich from whom transfers are made are likely to be much less numerous than the poor by whom they are received. Thus suppose that there is one rich man and ten poor ones.

[6] Compare the *Economics of Welfare,* p. 678 and Marshall's *Principles of Economics,* p. 541.

[7] It seems proper to say a word here about quantity index numbers. These purport to represent variations in "production"—an important part of real income—over a series of years, despite the fact that some items have increased and others diminished; a task that in a physical sense is impossible. Great labour has been expended on the construction of these index numbers, and in political discussions appeal is frequently made to them. A quantity index is usually constructed by weighting the several elements in accordance with the amount of expenditure on them in some base year. If then we suppose that this expenditure is proportionate to the productive power—ambiguities about the definition of productive power being ignored—then employed in producing the several items, if we suppose that tastes (and distributions) have not changed, and if we also suppose that constant returns operate everywhere in both the base year and the year with which a comparison is being made, a quantity index number will show how the quantity of productive resources at work in the aggregate would have had to change, if there had been no change in technique, in order to allow the output actually found in the latter year to be produced. It, therefore, measures, granted constant tastes (and distribution) and constant returns, the proportion in which *potential* output of *the pattern ruling in the base year* is greater or less in the year we are studying than in the base year. This information, resting, as it does, on assumptions that must often depart seriously from the facts, is very different from the precise and definite information which quantity index numbers are popularly supposed to give. The moral is, however, not to leave these investigations unattempted, but to be cautious about the uses to which we put their results.

A pound is taken from the rich man and given to the first poor one Aggregate satisfaction is increased. But the rich man is still richer than the second poor man. So the transfer of a pound to him again increases aggregate satisfaction. And so on until the originally rich man is no richer than anybody else. What is true of a transfer from one rich man to one poor one is also true of a set of transfers from few rich men to many poor ones.

No doubt at the moment if a rich man accustomed to a high standard of living has £5,000 cut off his income and given to a poor man, the rich man will suffer a good deal, while the poor man may have no idea of what to do with his new-found gains. But it is proper here to take a long-run view and to think of transfers, not as single, casual acts, but as lasting modifications of income distribution. From this standpoint, as we have already argued, cutting down large incomes probably leaves the people whose incomes are cut with substantially as much satisfaction as before, while the poor, whose incomes are increased, gain both directly and also indirectly by having their desire attitudes pushed up. This reasoning will not appeal to anyone who believes that people now rich are different in kind from people now poor, having, in their fundamental nature, greater *capacities* for enjoyment—real high-grade Herrenvolk. For myself, however, I see no reason for believing anything of the sort. If we agree that representative members of the two groups are probably by and large pretty much alike, the argument from the law of diminishing utility holds.

There are also incidental considerations available to support it. Thus it may well be that on the whole, in spite of the pleasure that some people take in contemplating the glories of Royalty and of "high-ups" generally, inequality itself damages happiness. For the odds are that the dwellers in hell are more annoyed at seeing the rich in heaven than the rich are pleased at seeing the poor in hell. To be "all in the same boat" is, for many, a consolation, even though the boat be a leaky one. On the whole then, for a one-commodity world we may feel reasonably confident, apart from possible reactions on potential real income, in this second crude welfare proposition.

In a many-commodity world, as we have seen, it is physically meaningless to say that one real income is larger than another, except in the special case where the one contains more of some commodities and not less of any. In like manner, it is meaningless to say that A is richer than B in respect of real income unless A's income contains more of some kind of commodities and not less of any. In like manner again, we cannot say that real income is transferred from A to B unless some commodities of some kinds are so transferred and none of any kind are transferred the other way. Thus plainly we cannot now appeal to the

law of diminishing utility in respect of real income in the straightforward way that we were able to do in a one-commodity world.

There is, however, a way round. Money income being homogeneous, the law diminishing utility *can,* of course apply to it. If it *does* apply to it, we can infer that transfers of money income from richer people to poorer people of similar desire attitudes increase economic welfare in exactly the same way as we can infer this about transfers in a one-commodity world.

But are we entitled to say that the law of diminishing utility in fact holds of money income? A man does not buy different commodities in the same proportions when he has £100 as when he has £99. We must suppose that he will adjust his expenditure in the optimum manner for each several amount of income and associated set of prices. Hence, to say that the marginal utility of money income to him decreases as its amount increases must mean that the difference of satisfaction yielded by the marginal pound of a hundred pounds expended in the optimum manner is less than that yielded by the marginal pound of ninety-nine pounds so expended. This proposition cannot be derived from the Law of Diminishing Utility in respect of individual commodities. It is a separate proposition. If it is to be accepted, this must be upon broad grounds of experience, reflection and conversation. On these grounds I myself feel reasonably confident that it is true. Granted this, again apart from possible reactions on potential real income, it follows that in a many-commodity world, no less than in a one-commodity world, transfers of money income from the relatively rich to the relatively poor (of similar desire attitudes) will increase economic welfare. This is so in spite of the fact that a large change in the distribution of money income in favour of the poor would probably reduce the volume of saving, thus leading indirectly to a rise in the rate of interest and, through that, to a rise in aggregate money income. So long as potential real income is not also affected, this does not matter. The transfers and their direct consequences are still there, irrespective of the fact that *also* the aggregate number of counters that go to make up money income has been increased.

Our conclusion in this matter is, however, as has already been indicated in cautionary parentheses, subject to a very important limitation. As everybody knows, transfers of money income from the better-to-do to the worse-to-do sections of the community must in practice he accomplished, if they are at all large, with the help of steeply graduated taxes. These are likely in some measure to check effort, enterprise and the development of capital equipment; and so indirectly to reduce potential real income. On the other hand, the fact that the relatively poor are made better off will certainly increase their ability to acquire skill

and to work hard, and *may* also increase their willingness. What will actually happen it is, of course, not possible to guess without a detailed study of the particular circumstances; and very likely not even then. No doubt, our fathers and grandfathers over-emphasized the dark and under-emphasized the bright side of the picture. None the less, it remains true that transfers *may* indirectly damage potential income so much that in the end they make against rather than in favour of economic welfare. Badly constructed schemes for giving poor people a "fairer share" of the national cake *may* even make the cake so much smaller that the absolute amount which they receive is actually reduced. These considerations do not, of course, warrant our standing still and doing nothing at all. But they do suggest that in going forward we should move with reasonable care and probe for hidden minefields.